Pharmacognostical and Botanical Identification of Some Important Bark Drugs Used in Indian System of Medicine (Unani)

DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF REQUIREMENTS FOR THE DEGREE OF MASTER OF PHILOSOPHY IN BOTANY TO THE ALIGARH MUSLIM UNIVERSITY ALIGARH-202001

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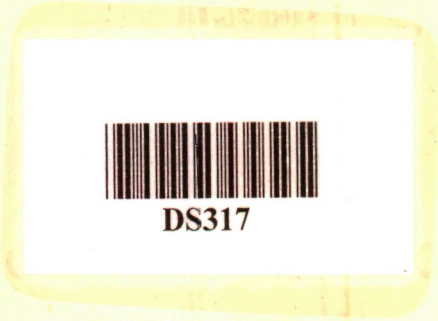
RASHEED UDDIN AHMAD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PHARMACOGNOSTICAL AND BOTANICAL IDENTIFICATION OF SOME IMPORTANT BARK DRUGS USED IN INDIAN SYSTEM OF MEDICINE (UNANI)

Dissertation submitted in partial fulfilment of the requirements for the degree of Master of Philosophy in Botany to the Aligarh Muslim University, Aligarh - 202001.

RASHEED UDDIN AHMAD

The dissertation entitled "Pharmacognostical and Botanical identification of some important Bark Drugs used in Indian Systems of Medicine - Unani" submitted by Rasheed Uddin Ahmad is considered suitable for the award of M.Phil degree in Botany

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CONTENTS

(1) INTRODUCTION

There are about 1500-2000 plant species in the literature of drugs reported to be medicinal in our country. They are attributed with a number of medicinal virtues, uses, properties and also remembered with a number of different vernacular names in Unani, Ayurveda and Siddha Systems of Medicine. At present some 1500 drug yielding plants are well identified and well known with their uses and vernacular names. Still there are many important drug yielding plants commonly used in our Indian Systems of Medicine yet to be identified and studied for their medicinal values. Therefore, there is a need to take up this problem on a large scale for their exact identification, experimental cultivation and scientific evaluation by means of botanical, pharmacognostical, chemical, pharmacological and clinical screening etc., to lay down the standards for single drugs and also the compound formulations so that a standard pharmacopoeia could be produced in order to bring the parity in the compound formulations, and to produce standard drugs throughout the country at par with Allopathic System .

Our country at present is not self sufficient in pharmaceutical productions. Keeping in view the expanding needs of the pharmaceutical industries and their increasing demands for a maximum output for meeting the public demands, utmost attention should be paid to the production of raw material (in the form of crude drugs) by way of experimental cultivation through various

survey units, research centres and other institutions running under the auspices of State and Central Governments in the country. In Unani, Ayurveda and Siddha Systems the drugs are used in crude forms only i.e. without scientific evaluation. When these drugs will be evaluated on the lines, mentioned above, then the real role of these drugs can be understood in combating different diseases at par with Allopathic System.

Basically the drugs of Indian Systems of Medicine (Unani, Ayurveda and Siddha) are used either singly or in combinations of the various formulations. A number of plants used medicinally in our systems have chemically been analysed as evident from the published work in the country as well as abroad. We should now try them pharmacologically and clinically to prove the efficacy of the exact, effective and active chemical constituents. The pharmacological testing of the compound crude drugs (used in various formulations) can not be done unless each and every single drug yielding plant is identified botanically, pharmacognostically and chemically and then put for pharmacological and clinical trials.

India is full with important medicinal flora, especially the Himalayan ranges extending from South East to North West, the Gangetic Plains and the Western Ghats extending from North to South, providing immense scope for research workers to explore the field. This wealth is in surplus and can easily be utilised

to feed out the drug industry as far as the crude source is concerned. Under such a wide range of climatic conditions of our country, it is natural to have a wide range of medicinal plants. Even the plants of tropical and sub-tropical, alpine and sub-alpine regions are met with in one part or the other. It is difficult to find any other country of similar type, where such a variety of medicinal plants grow wild. Nearly 50 per cent of plants used in the British Pharmacopoeia are reported to grow in our country, though with variation in the species. Most of these plants growing wild in our country are annually collected for the pharmaceutical industry. A very limited number of drugs used in our systems is imported.

In view of the above mentioned difficulties Government of India in the Ministry of Health and Family Welfare (Department of Health) has established a Cell with the name Indian Systems of Medicine (I.S.M.) now Traditional Systems of Medicine (T.S.M.) to carry out the research work on the drugs used in these Systems and prepare a National Pharmacopoeia for all the three Systems respectively under the Drugs and Cosmetics Act, 1940. To speed up the Research work on these drugs the Ministry has established a Drug Standardization And Testing Laboratory with the name P.L.I.M., (Pharmacopoeial Laboratory for Indian Medicines) at Ghaziabad. Along with this the Ministry of Health has also established separate councils for Unani, Ayurveda and Siddha systems at New Delhi

as Headquarters. These councils promote the work by sanctioning various projects and schemes to carry out the research work on all the aspects of the drugs used in Indian Systems of Medicine.

(2) REVIEW OF LITERATURE

(A) HISTORICAL

To understand exactly the usage of drugs of plant origin (basically) and other origins, as to how they came into prominance in medicine through out the world, it is necessary to go through the developmental history of these drugs. This will help not only to the students, research scholars, and the workers engaged in this field but also to the physicians and the manufacturers of the drugs of Indian Systems of Medicine especially the Unani System in this country. Because at present our Systems of Medicine (Unani, Ayurveda and Siddha) have a number of drugs in common, though they are of different origin, source and belong to different schools of medicines. These drugs even now are identified with different vernacular and common names though the botanical identity is one and the same. Similar is the case with animal and mineral drugs, due to which identification of the actual drug becomes difficult and leads to adulteration and substitution and lastly to the sub-standard or wrong preparation of the drugs in these systems.

The history of the drug usage goes back to the pre-historic era. Basically there are three schools of medicine in the world which can be assigned to utilise the drugs of plants, animal and mineral origin for curing different types of ailments in different ways, with a difference of few hundred years of development of this knowledge, simultaneously. These are Chinese School of Medicine (2,735 B.C.) in the East, Indian Medicine (4,500 - 1,600 and 2,500 - 600 B.C.) and the Greek Medicine (460 B.C.) in the West respectively.

(i) CHINESE SCHOOL OF MEDICINE

Origin of the Chinese medicine is attributed to the mythical god believed to have flourished about 2,735 B.C. The Chinese medicine has a Pharmacopoeia like compilation in Chinese called 'Pun Tsao' or the 'Great Herbal', having 40 volumes describing several thousand preparations. Chinese were the earliest to employ goose grease the 'adeps amberinus' of the later pharmacopoeias as a preferable fat for inunction, and the modern scientific researches on the penetrating properties of fat places it on top. The other medicines employed by the Chinese from various origin (plant, animal and mineral) are described below:-

PLANT ORIGIN:

1. Sea Weed as Iodine Source
2. Rhubarb
3. Aconites
4. Cannabis

5. Ephedra (Ephedrine source)

6. Camphor

MINERAL ORIGIN:

1. Iron

2. Sulphur

3. Mercury

4. Alum

ANIMAL ORIGIN:

1. Musk

2. Toad's Eye-lids

3. Earthworms

(ii) INDIAN SCHOOL OF MEDICINE (AYURVEDA)

The vedas are the earliest sacred books of Hindu mythology. They are four in number viz., Rigveda, Samveda, Yajurveda and Atharvaveda. Hindus believed that they were the words of God and never composed by man. It was supposed that they were taught by the God to the sages (revealed who were the seers of truth). There was really no veda called Ayurveda. Its existance is a myth. According to Susruta it is an upanga of Atharvaveda. It was raised to the Status of a veda dnd appended to the Atharvaveda to give the science of medicine the necessary sanctity and authority. Ayurveda is the name, which the ancient Indian gave to their science of medicine (Ayur-means life and Veda to know

or attain). There are two versions of its origin. The medical school traces its origin to Bhardwaja, who received it from the God Indra. The surgical school traces its origin to Dhanvantari, who received it also from this God. According to Charaka, Ayurveda emanated from the creator 'Brahma' who revealed it in its entirity to Prajapathi, 'Lord of the creatures'. From him it was passed on to the Aswins, the divine twin horseman, the helpers and the healers among vedic gods. They passed it on to Indra, king of the god, and from him mankind received its divine wisdom. Other sources believed it to be derived from Rigveda compiled between 4,500-1,600 B.C. and Ayurveda 2,500 B.C. Charaka and Susruta are considered highest authorities. Charaka gives 50 groups of ten herbs each. While Susruta has arranged 760 herbs in 37 sets.

In Ayurveda, beside the classical works of Charaka and Susruta, there are many important works called 'Niganthu' on Ayurvedic Materia-Medica. The oldest Materia-Medica 'Niganthu' appears to be that of Deodas Kashiraj of Banaras (a king) who is also believed to be the incarnation of lord Dhanvantari. He is believed to have taught his 'Dhanvantari Sangatha' to his disciples, amongst them Susruta was the most renowned. He is believed to have written another book "Raj Niganthu" on drugs but some believe it to be written by another Vaidya named Dhanvantari, who lived during the time of king Vikramaditya. There are about 400 drugs (herbs) described in this book, which has been giving inspiration

to many authors later as the main source.

Sarangdhar is believed to have lived in 8th Century A.D., has written a book on materia-medica named after him. Bhavamisra, who is believed to have lived in 14th Century A.D. was a learned vaidya of his time and was a native of Banaras (now Varanasi) has written a comprehensive treatise on Medicine named 'Bhavaprakash' of which 'Bhavaprakash Niganthu' forms a part, describing more than 600 drugs including some drugs of other systems. Narhari is quoted in English books on Ayurvedic drugs as native of Singhapur, Kashmir. He is described to be the author of 'Chauramani' or 'Raj Nighanthu'. The name of Lala Salig Ram is also worth mentioning who was a native of Moradabad. He is the author of 'Saligram Niganthu' which describes 1574 drugs and illustrates some drawings giving their synonyms in other languages.

(iii) EGYPTIAN SCHOOL OF MEDICINE

In the West, before the advent of Greek Medicine, records of drugs usage are also available in the form of Egyptian Materia-Medica, Assyrian and Babilonian Pharmacy. The famous "Ebers Papyrus" believed to be written about 1,500 B.C., contains a collection of prescriptions and formulae with a wide range of uses. The following drugs of plant, minerals and animal origin are described in the Egyptian Materia - Medica (Ebers Papyrus). They are:-

PLANT ORIGIN:

1. Oil (of plant source)
2. Wine (of plant source)
3. Beer (of plant source)
4. Yeast -do-
5. Vinegar -do-
6. Turpentine
7. Figs
8. Castor oil
9. Myrrh
10. Mastich
11. Frankincense (of plant source)
12. Horn Wood
13. Aloes
14. Opium
15. Cumin
16. Peppermint
17. Anise
18. Fennel
19. Saffron
20. Lotus flowers
21. Linseed
22. Juniper berries
23. Henbane
24. Poppy
25. Mandragora
26. Gentian

27. Colchicum
28. Squill
29. Cedar
30. Elder Berries
31. Honey
32. Grapes
33. Onion
34. Garlic
35. Acacia
36. Date Blossoms

MINERAL ORIGIN:

1. Iron
2. Lead
3. Bitumen
4. Magnesia
5. Nitre
6. Vermilion
7. Copper Sulphate
8. White Lead
9. Crude Sodium Carbonate
10. Salt
11. Precious Stone (in finely powdered "Calcined" forms)

ANIMAL ORIGIN:

1. Lizzard's Blood
2. Swine's Teeth
3. Putrid Meat
4. Stinking Fat
5. Moisture from Pig's Ears
6. Milk
7. Goose Grease
8. Ass's Hoofs
9. Animal Fats (from various sources)
10. Excreta of various animals (including Human beings, Donkey's, Antelopes, Dogs and Cats and even Flies).

In the library of Sardana-Palus at Ashurbanipal (650 B.C.) clay tablets have been found belonging to Assyrians and Babylonians, relating to medical and pharmaceutical subjects. Their list of drugs resembles that of Egyptian Materia Medica, where 250 herbs, and 120 minerals and stones are described, among which are Cassia, Cinnamon, Costus, Orris Root, Anise, Jasmine, Oleander, Allamander, Cathartica, Mint, Henbane, Liquorice, Alcohol, Terpentine and Beer of Plant origin while of animal and mineral origin are Fats, Oils, Wax, Bitumen and Alum etc.

(iv) GREEK SCHOOL OF MEDICINE:

The Greek medicines' origin is traced back to Aesculapius who was probably a historical personage and subsequently deified

by the Egyptian and other ancient people. Actually in the West the history of medicine and pharmacy begins from Hippocrates, who born in the Iseland of Cos in 460 B.C. and is considered to be the father of medicine and said to be a descendent of Aesculapius. In his writing Hippocrates has mentioned nearly 400 simples as medicinal substances. Theophrastus (370-287 B.C.), later on who received the herb garden of Aristotle, mentioned in "on the History of Plants" and in another book "on the Causes of Plants" 500 drugs. However, the most authoritative and significant Pharmocopoeial treatise of the Greeks was the text of Dioscorides (60 A.D.). He is said to become Surgeon in Neuro's army to learn the flora and fauna of different countries. During his army career, he travelled Italy, Greece, Asia Minor, Spain and France, where he collected a vast number of drug samples of plant, animal and mineral origin and confirmed their identity and mineral virtues wherever he got the opportunity. His famous treatise on materia-medica was first published in Venice (Greece) in 1499 and for 1600 years it served as Pharmacological Vadmecum in the history of medicine. This book was translated into Arabic and other European languages and is very often quoted in the works of Arab authors. This treatise was arranged in alphabetical order and described the drugs of different origin (plant, animal and mineral). These are:

PLANT ORIGIN:

1. Acacia
2. Aconite
3. Aloes
4. Anise
5. Balsam
6. Bitter Almond
7. Buck Thorn (Rhamnus)
8. Cardamom
9. Cumin
10. Dill
11. Elaterium (Juice of the Cucumber fruit)
12. Gentian
13. Hemlock
14. Juniper
15. Lettuce Vinegar (Vinegar of Lactuca)
16. Lichens
17. Licorice (Liquorice)
18. Mandrake (Mandragora)
19. Mint (Mentha)
20. Penny Royal (Penny wort)
21. Poppy
22. Rose Oil
23. Worm Wood

MINERAL ORIGIN:

1. Ammoniac
2. Arsenic
3. Bitumen
4. Bird Lime
5. Brine (Salt)
6. Calamine
7. Caustic Lye
8. Soot
9. Verdigris (basic Copper acetate)
10. White Lead
11. A number of metalic oxides, Sulphates and Sulphides.

ANIMAL ORIGIN:

1. Ash of Hippocampus
2. Canthrides
3. Fish glue
4. Urine

OTHERS:

1. Boiled Oil
2. Starch
3. Wine

Amongst other Greek workers the names of Pliny the elder (23-79 A.D.) and Galen (130 A.D.) are worth mentioning. Pliny a

contemporary of Dioscorides on "Natural History" wrote 37 books, out of which 20-27 deal with medical botany (medicines derived from plants), 28-33 deal with materia-medica i.e. other than botany (drugs derived from the bodies of men and other land animals). Similarly Galen, who is believed to have died in Sicily and born at Pergamum, has kept a pharmacy for a long time and is believed to have developed a number of medicinal preparations of plant origin called "Galenicals". On Pharmacology Galen is credited with 30 books. In one of the books (translated into Latin under the title "De Cimplicibus", items have been arranged in alphabetical orders and enjoyed great repute. His other works were translated into Arabic. He also became the Physician to Comodus and during his travel devoted a great deal of his time in collecting the choisest drugs to have at his disposal. In his writings he always empnasised on the importance of the pure drugs and careful handling of them and advised to the readers "in order to know the drugs, inspect them not once or twice but frequently, for though twins look alike to strangers, they are easily distinguished by friends".

(v) ARAB SCHOOL OF MEDICINE:

After the decline of medicine in Rome and the texts of earlier Greek workers were foresaken, Galen gradually assumed highest authority in medicine and luckily the Greek medicine found its votaries in Arabs, who translated as much work into Arabic

as they could found. Great contributions have been made by the Arab physicians on the medicinal properties of the plants, though their publications are based on the materia-medica of Dioscorides and Galen etc., but with lots of new additions alongwith the foot notes and commentaries. There is an abundance of references of the book "Almaliki" of Ali-ibn-Abbas, and for the development of the Arab medicine as a whole, the names and the contribution of luminaries like Qusta-bin-Lauqa, Hajjaj-bin-Mutar, Ibn-ul-Batriq, Isa-bin-Yahya, Ahmad-bin-abi-al-Ashat, Ibn-i-Jaljal (Galgal), Abu Sahal Masihi, Abi-Ibn-Saadiq, Abul Hasan Qarshi, Ali-bin-Rizwan, Ibn-i-Wafid, Hakim Raziuddin Abul Mansoor Said-bin-Bushar-bin-Abdus, Jarji-Zidan, Abdul Qasim Halef ibn-al-Abbas al-Zahrawi, Yuhanne-bin-Masawayh (777-857 A.D.) Abul Hasan al-Tabari (9th century), Yaqub bin-Ishaq al-Kindi (800-87 A.D.), Abu Bakr Mohammad bin-Zakaria Razi "Rahazes" (854-932 A.D.), Shaikh Bu Ali Seena "Avicenna" (980-1037 A.D.), Abdullah Mohammad Al-Idrisi "Sharif" (1100-1166 A.D.), Ziauddin Abu Mohammad Abdullah ibn-e-Ahmad al-Maliki "Ibn-al-Baitar" (1197-1243 A.D.) and Ibn an Nafis (1210-1288 A.D.) are worth mentioning.

Besides all the physicians and workers already mentioned in the preceding paras one should not ignore the names of workers who wrote valuable treatise on materia-medica like Yahya-bin-Jazla "Mughni", Abu Rehan al-Berruni, Haji Zain Uddin Attar, Shaikh Yusuf of Bagdad.

Zakaria Razi 'Rhazes' is credited with having written 250 works. Some of which are on Pharmaceutical aspects. Rhazes amongst his contemporaries was known as Galen of his time. His most famous contribution is "Al-Hawi-Kabir" or "Continents of Rhazes". Garison in his history of medicine' classes Rhazes with Hippocrates in his influence upon medicine.

Avicenna amongst the Unani Physicians was known simply as Shaikh. He is the world renowned author of the book Canon (Al-Qanun). In fact, he was the founder of Greco-Arab School of Medicine. During the middle ages the Canon of Avicenna was by far the most popular text book of medicine in Europe and was most frequently quoted by later writers. Actually Avicenna's work was considered authoritative and used by the Universities of Europe till as late as 1650. It is his likeness that adorns the diploma of Pharmaceutical Society of Great Britain. His second volume of Canon described 719 drugs.

Al-Idrisi was born in Sevta and educated in Spain. He is famous for the collection of herbs. Alongwith him the name of Rahseed-uddin-Suri, who toured the hills and forests of his country Syria, is associated in search of medicinal plants.

The reference of his work is found in the famous book 'Al-Aqaqir'* (Believed to be written by Ibn-al-Baitar) where 1400 drugs are described, and references of more than 150 Arab and Syrian Physicians who were concerned with the collection of the information about these drugs are mentioned. Out of these 150 Physicians, the name of Al-Idrisi has been referred as 'Sharif' more than 200 times and is believed to be an authority of drugs of plant and animal origin of North Africa.

Ibn-al-Baitar was chief botanist in court of Egypt. He travelled through North Africa, Spain, Greece, Italy, Syria and Asia Minor. He visited the botanist of every country and the herbs in their natural growth and investigated their properties experimentally. In his monumental work "Jame-ul-Mufredat" ** collected the remarks of Dioscarides, Galen, Rhazes, Avicenna and others on drugs. It deals with 2,000 drugs out of which 1,700 are of plant origin alone. Another book written by him on materia-medica is known as 'Kitab-ul-Mughni fi-al-Adviya-al-Mufarreda'.

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* According to Leclerc the name 'Sharif' refers to Abdullah Mohammad Al-Idrisi. Previously, the exact period in which he wrote the materia-medica was not known. It is only recently that Prof. Helmut Ritter has announced the presence of the book "Al Aqaqir" while he was searching the manuscripts on this topic in mosques and liberaries of Constantinople, as like the lost book of Al-Idrisi. Later on Dr. Max Mayerhof has published his paper where he has confirmed that this book is the same by Al-Idrisi which was deemed lost. The manuscript of Al-Aqaqir is kept in the library of History of Medicine, Istanbul, on which no date is written. Previously it was believed that 'Al Aqaqir' was written by Ibn-al-Baitar.

** An Egyptian edition of the book is available. Part of the work were published at various times in Latin under the name of 'Simplica'. A French translation by Leclerc is also available as 'Notices et extraits des manuscripts de la Bibliotheque Nationale'.

Shaikh Dawood of Antakia wrote a book (about 1008 A.H.) on medicine named 'Tadhkirat-ul-Albab (تذکرۃ الالباب) better known as 'Tadhkira Dawood Anataki (تذکرۃ داؤد انطاکی) describes several hundred herbs besides animal and mineral origin drugs.

Abul Farj-ibn-al-Qaf (630-685 A.H.), the pupil of Hakim Ibn-i-Abi-Usaibiya (the famous author of 'Tabqat-ul-Atibba' and was given the title of 'Ameen-ud-Daula' in the royal fort of physician), is the author of several books on medicine besides a commentary on Canon (Al-Qanun) of Avicenna in six volumes. His book 'Kitab-ul-Umda-fi-al-Jirahat' contains 20 sections, of which section 11 gives the description of 212 drugs dealing with surgical practices and section 20 deals with Salves, Ointments, and Oils, used for dressing wounds.

Yusuf-bin-Omar Saheb-ul-Yemen (died 694 A.H.) the author of 'Almotamad' printed in Egypt, has described only frequently used drugs with their actions.

Arab's contribution may also be recognised by going through the records on the translation work done on Indian and Persian books into Arabic. This aspect of study highlights the fac that how the drugs of different origins (Greek, Persian, Indian etc got mixed up, and were included in their medicaments and the materia-medica through ages. Yuhanna-bin-Masawayh in his book 'Jame-ul-Tibb' wrote that a number of books of Sanskrit were translated into Arabic. The authors whose work was translated are

Kinkar, Manjal, Bakhar Saleh-bin-Babilla etc. The important books translated are 'Israr-ul-Mawalid', 'Kitab-ul-Adwa', Kitab Shark-ul-Hindi', Kitab-ul-Somum, Kitab Sasru-fi-Tibb-Asma Aqaqir-al-Hind', 'Astankar-ul-Jame', 'Mukhtasar-ul-Hind-fi-al-Aqaqir,' 'Ilajat-ul-Atibba al-Hind al-Tauhum fi-al-Amraz-ul-Alal; 'Rae al-Hind fi-al-Hayat-o-Samumha' and Shanaq Hindi etc.

(vi) GRECO-ARABIC SYSTEM OF MEDICINE (UNANI):

The system which originated in Greece and developed by Arabs into an elaborate medical science on the basis of the teaching of Hippocrates, Dioscorides and Galen, is called Greco-Arabic System of Medicine, which later on, after centuries, came down to India with Muslim's advent and flourished with the name Unani System of Medicine. It has imbibed the best what was known to other contemporary systems of medicines in Egypt, Syria, Iraq, Persia, India, China and other Middle and Far Eastern Countries, as already mentioned.

Amongst the Indian Physicians the names of Hakim Syed Mohammad Husain, Hakim Raza Ali Khan of Deccan, Hakim Mohammad Azam Khan, Hakim Mohammad Najmul Ghani Khan are very important to be mentioned. Similarly Hakim Ali Gilani, Hakim Momin and and lastly the name of Hakim Shareef Khan may also be included as important contributers. Hakim Syed Mohammad Husain who wrote 'Makhzan-ul-Adviya' is the pioneer worker among the Unani Tabibs (Physicians) in India. His original work is in Persian language

which has been translated into Urdu also. It describes nearly 1,500 drugs including hundreds of herbs growing in India. It also describes Cinchona bark and Quinine. Hakim Raza Ali Khan of Deccan is the author of "Tadhkirat-ul-Hind", in Persian language, on Indian herbs. He mentioned the Sanskrit and South Indian names of some herbs on the basis of his own experience and observation. Hakim Mohammad Azam Khan (died in 1902) is the author of the masterpiece "Muheet-i-Azam" in four volumes, describing several thousand drugs including some used in Allopathic medicine. Hakim Mohammad Najmul Ghani Khan (son of Hakim Azam Khan's sister) wrote a voluminous book "Khazanat ul-Adviya" in 1915. It is on the line of "Muheet-i-Azam" and is in Urdu, includes more Allopathic medicine, describing 2,612 drugs.

(B) THEORIES OF UNANI SYSTEM:

After giving the overall picture of the history of the usage of drugs it is important to mention some aspects of philosophical and theoretical ideas on which the treatment of Greco-Arabic or Unani System of Medicine, in our country at present, is based. In Unani Systems of Medicine different theories viz. of Temperament (Mizaj), Humours (Akhlat), Psychology (Ilm-ul-Nafsiat) and lastly the Vital Sipirt or Soul (Ruh) play very important role in the treatment of different types of ailments. It is well established that only these theories have led to the evolution of the present day medical sciences. Amongst

these, the theory of 'Temperament' and the theory of 'Humours' occupy very important place in classifying the individuals (patients) and the drugs, their usage for various ailments in relation to treatment, diagnosis, and symptamatology etc. In this system there is a general concept of variation in the temperament of individuals (genetic make up) and that is why the individuals and the drugs are classified into hot (har), cold (baarid), moist (ratab) and dry (yaabis) types. On the basis of these theories the use of these drugs came into existance by way of experience, observations and practice, which later on slowly and gradually came down to the present generation.

(C) INDIAN SCIENTIFIC CONTRIBUTION:

In Unani system of medicine, the drugs used for various ailment are obtained from plants (mostly), animal and mineral sources. There is a general belief in this system that the drugs, some how or the other, have properties and action to cure the ailments without side effects. It is true also as no toxic effects so far have been found in the treatment of this system, but without scientific explanation. Similar is the case with other Indian systems of medicine. As these drugs are used in their own natural forms and used unsynthesised makes the basic distinction between the Allopathic and these systems. Because of this fact only, these drugs got the name 'Crude drugs' and are used either as

whole plant (plant origin drugs) or their parts of e.g. root, stem, leaf, flower, seed, fruit, bark, modified structure and their by products as gum, resin, exudate etc. Sometimes Lichens, Moss and Fungi, Plant Fossils are also used as important medicines. Where as in Modern System (Allopathic) the drugs are used after scientific evaluation and thereafter synthesised for market needs.

Earlier it has been mentioned that most of the drugs of plant origin are well identified botanically, but there are still a number of drugs whose exact identity is not confirmed, and considered to be controversial in nature. This has happened due to their unknown origin, procurement from abroad, wrong uses and handling from the remote past, because of the scanty and unauthentic literature and also due to use of different vernacular names in different languages etc. It has also been noticed that the actual drugs described in the ancient classical texts either is not available in our country or all together a different species is utilised in place of the original one. Sometimes these drugs, because of their close resemblance in appearance with each other are wrongly picked up by unskilled or untrained people dealing in this trade. If a wood, stem, root, bark, fruit or seed etc., of different drugs (having close resemblance with each other) is kept in a gunny bag for use, it becomes difficult, even for a professional Botanist or a Pharmacognosist, to give its botanical identity by just having a glance. It can be done only when the drug sample is identified in the laboratory by studying

the botanical, pharmacognostical and chemical characters of differentiation or else it can be identified when the source plant from which the drug is obtained is also provided. Merely by seeing the drug sample or by observing it for a longer period in the pharmacy or in the market does not mean that its exact botanical or pharmacognostical identity can be made. These types of intricacies lead to the problems of adulteration, wrong identification and even the substitution with those of the other drugs.

It has been noted that most of the drugs which are used in this system (Unani) in our country have not been worked out thoroughly. Some of them have been worked out botanically and some have been worked out only for their anatomical characters and chemical constituents. Similarly only few have been tried pharmacologically and put for clinical trials, but none of them have been tried at one place for the aforesaid aspects under qualified persons. Moreover the work so far has been carried out on these drugs are not in agreement with each other. One author specify some characters while others differ by giving other characters. Same is the case with compound formulations where the parity is not maintained because one pharmacy makes its drugs (formulations) according to its own choice and methodology based on the literature available with it. While the same prescription (formulation) is made in another pharmacy according to its own methodology and parameters available to it. It has also been

noticed that a formula prevelent in North does not comprise of the same ingredient drugs in South or Vise-versea. Such complications have lead to the sub-standard and wrong manufacturing and disparity in the formulations through out the country. As a result of which laying down of the standards of such drugs become very difficult. A chemist does not have a complete data on chemica constituents of a single drug in a single formulation which ultimately causes difficulty to the Pharmacologist in ascertaining the properties and actions of the active constituents present in the drug.

For the convenience of research workers engaged in this field it is important to give here the names of the drugs which are used in Unani system of medicine with their botanical, vernacular names and the parts used. For this a comprehensive list of the drugs, used at present in this system, is appended. (See Appendix - A), giving their most accepted botanical, vernacular and English names. Here it will be noted that still a number of the botanical names given in the list for a particular drug is also given for the other which causes confusion. Sometimes the vernacular names and their spellings (due to pronunciation) lead to such complications, confusions and doubtful identity of the drugs. All this need confirmation.

Before initiating the actual research work on the aspects discussed above, it is essential here to review the literature available on this subject in our country. It is worth mentioning

that most of the work available on the subjects do not tally with each other and seem to be copied from the same source. These are the compilations based on published papers, personal informations, and other unauthentic published and unpublished sources. If one publication deals with botanical identity of the drug, the other describes the vernacular names (based on the names given in the texts) and also on the basis of the informations given in different floras. At one hand few of the books deal only with the anatomical aspects of leaves or any other part, on the other hand few books deal only with chemical aspects of few drugs. Though all these books and publications do not throw light on all the aspects of the standardization but they definitely provide information to ease the research work on these drugs. Only recently few scientists in different Research Institutes and Universities have taken up this difficult task and doing standard work by publishing them in different journals of the country and also abroad. The important work so far carried out by the qualified scientist on the Bark Drugs is given in the Appendix - D.

In Unani System there are a number of drugs which are used now and then in a number of compound formulations are still unidentified and considered doubtful as far as their botanical identity is concerned. Some of them are mentioned here:

(1) Gaozaban: A number of botanical names e.g. Onosma, Anchusa, Borago etc. are given to it.

(2) Ushna: It is a mixture of five to six species of Lichenus and is generally identified as Parmelia perlata, which is a correct identification for the drug Charila and is one of the Lichen, (out of 5-6 species) mentioned above.

(3) Todri: For this a number of botanical names are given in the literature e.g. Lepidium Chiorantius Mathiola etc.

(4) Zarnab: To this drug various identifications are given e.g. Abies, Taxus and Flacourtia etc.

(5) Zarambad: For this also different botanical names viz. Carcuma, Aconitum, Delphinium etc. are given.

(6) Turbud Safaid: Ipomoea turpethum is the generally accepted botanical name for this drug. Other names given to it are Marsdenia and Operculina etc.

(7) Jadwar: Delphinium denudatum and Aconitum Spp. are the general identification given to this drug but according to classical literature the identification to it should be Zedoary.

(8) Brahmi: Two types of Brahmi are used. But which one is correct is still not known.

(9) Kanocha: Actual identification of this drug is not yet known, but used very commonly.

Like the above drugs there are many other which needs confirmation. In many scientific books a single plant is described to be used for many ailments, similarly different parts of the single plant are described to be medicinal. In most of the Unani books sometime leaf of the plant is described medicinal and sometimes the roots of the same plant is described to have medicinal

properties. It is also noted that some times both the above parts or even more are reported medicinal. These are some of the noticeable intricacies found very commonly in the texts which has made the identification and standardization more difficult and confusing. This can be rectified only when all these drugs are slowly and gradually worked out authentically under the guidance of compitent, qualified and sincere workers for each discipline.

In the light of the above mentioned problems the present study has been taken up to work out only some of the important bark drugs used in Unani System in order to achieve the goals of standardization as it is not possible to cover all the aspects of all the bark drugs in a limited period of time. Therefore, only the important anatomical and chemical characters alongwith the differentiating characters will be worked out so that a systematic study of these drugs could be done.

(3) PLAN OF WORK

To carry out the research work on the said problem the important Bark Drugs used in Indian Systems of Medicine (Unani) will be procured from the market or from the natural source as the case may be. The actual study will be carried out on the following lines:-

(1) Botanical Identification:

The exact botanical identification of the drug yielding plants will be given alongwith the detail description of Morphological Characters, Synonymes, Habit and Habitat, Period of Occurrence and their place of availability and procurement according to the taxanomical norms and the important floras on the subject.

(2) Pharmacognostical Identification:

i) Crude drugs: The Bark drugs will be worked out giving their Macroscopical (External) characters viz Colour, Size (length and diameter in cms.) and fracture and fissures etc. and the Microscopical (Internal) characters viz Cell Structure, Cell Contents and the Floresence Analysis etc.

ii) Chemical Constituents: The important chemical constituents so far known will be given in a table form and a general chemical screening will be done by powdering the drugs and tested for important identifying chemical characters.

iii) Substitutes and Adulterants: If any substitutes or an adulterant at all is known for the genuine drugs will be workedout giving its detail botanical and pharmacognostical aspects as done for the genuine drugs.

iv) Purity, Strength and Assay: The study will be carried out on (a) Foreign Organic Matters (b) Total Ash Contents (c) Acid Insoluble Ash (d) Alcohol Soluble Extractives (e) Water Soluble Extractives etc. according to the methodology given in the Indian Pharmacopoeia (21).

(4) METHODOLOGY (Materials and Methods):

The following methodology will be adopted for the present study.

i) Botanical Identity: The Botanical Identity of the drug yielding plants will be done according to the norms of taxanomical characters i.e. by studying the flowers and other plant characters given in the different floras and taxanomical books.

ii) Crude Drugs: Fresh samples (at different stages of growth) or the market specimens of the bark drug will be procured from different locality and sources in the country, and will be studied for their important Microscopical characters. Free hand and Microtomic sections will be cut for the study of Microscopical characters. The staining and mounting will be done according to the usual plant microtechniques (12), Micro-chemical testing will be done on fresh sections according to the methods laid down by Kay (15), Johansen (12), and Trease (27). For the study and the measurement of the isolated tissues and cells, small pieces of the material from different parts of the bark drugs will be macerated separately in Schultz's fluid, washed with water, teased and mounted in glycerine. The representative diagrams will be drawn with the help of Cameralucida. The powder of the bark drugs will be examined under the ultra-violet light according to the methods described by Chase and Pratt (4) and the florescence characteristics will be recorded in the form of a table.

(5) REFERENCES

(1) Ahluwalia, K.S., 1970, British Pharmacopoeial Codex Plants and their Indian Subatitutes (alongwith their indigenous uses, names and distribution), Govt. of India, Ministry of Health, New Delhi.

(2) Ahmad, R.U. and Srivastava, P.C., 1977, About the Utilisation and Cultivation of Medicinal Flora of J&K State, Cultivation and Utilisation of Medicinal and Aromatic Plants, Regional Research Lab., Jammu - Tawi, 150-153.

(3) Aziz, M.A., 1961, Unani or Arab Medicine, Instt. of Hist. of Medicine, New Delhi.

(4) Chase, C.R. and Pratt, R., 1949, J. Amer. Pharm. Ass. (Sec.edn.), 38, 324.

(5) Chopra, R.N., Nayar, S.L. and Chopra, I.C., 1966, Glossary of Indian Medicinal Plants, Council of Scientific and Industrial Research, New Delhi.

(6) Chopra, R.N., Chopra, I.C., Handa, K.L. and Kapoor, L.D., 1958, Chopra's Indigenous Drugs of India, Sec. edn., U.N. Dhur & Sons, Pvt. Ltd., Calcutta.

(7) Claus, Edward P., Tyler, V.E. and Brady, L.R., 1970, Pharmacognosy, Sixth edn. (Indian), Lea & Febiger, Philadelphia.

(8) Dey, K.L., 1896, Indigenous Drugs of India, Thalkar, Spinkls & Co., Calcutta.

(9) Kanturi, S.G.H., 1897 (1317 H.), 1930, Tarjuma Qanun-i-Shaikh (Urdu), Vol. I, Part II, Nawal Kishore Press, Lucknow, 342-367.

(10) Iyenger, M.A., 1974, A Hand Book of Pharmacognosy, First edn., College of Pharmacy, Kasturba Medical College, Manipal, Karnataka.

(11) Iyer, K.N. and Kolammal, L, 1960, Pharmacognosy of Ayurvedic Drugs, Series 1, No.4, Deptt. of Pharmacognosy, University of Kerala, Trivandrum.

(12) Johansen, D.A., 1940, Plant Micro-technique, Megraw-Hill Book Co., Inc. New York, 182.

(13) Kabiruddin, M., 1929, Kitab-ul-Adwiyyh (Urdu), Vol. II, Daftar-ul-Masih, Hyderabad.

(14) _____, 1950, Tarjuma-i-Kabir, Vol. I-IV, Daftar-ul-Masih, Hyderabad.

(15) Kay, K.L., 1938, The Microscopical Studies of Drugs, Balliere, Tindall & Cox, London, 16.

(16) Khan, A., 1906, Iksir-ul-Azam, Vol. II, Nawal Kishore Press, Lucknow, 266-328.

(17) Kirtikar, K.R. and Basu, B.D., 1975, Indian Medicinal Plants, Vol. I-IV, Reprt. edn., Allahabad.

(18) Kutumbiahk P., 1962, Ancient Indian Medicine, Orient Longmans, New Delhi.

(19) Latif, A., 1956, Kitab-ul-Adwiyyah-albiyyah (Urdu) Iran Society, Calcutta.

(20) Nadkarni, A.K., 1954, Dr. K.M. Nadkarni's Indian Materia Medica, Vol. I & II, Third edn., Popular Book Dept., Bombay.

(21) Pharmacopoeia of India (The Indian Pharmacopoeia), 1966, Sec. edn., The Manager of Publication, Govt. of India Press, Delhi.

(22) Said, M., 1966, Hamdard Medical Digest, Vol. IV, Karachi.

(23) Shah, C.S. and Qadry, J.S. 1971, A Text Book of Pharmacognosy, First edn., Messrs B.S. Shah, Ahmedabad.

(24) Sheriff, M., 1976, A Catalogue of Indian Synonymes, Ist Reprt. edn., Periodical Book Agency, Dehradun.

(25) Steingass, F. 1973, Persian English Dictionary, First Indian edn., Orient Book Corporation, New Delhi.

(26) Tackholm, V. and Drar, M., 1973, Flora of Egypt, Vol.I-IV, Otto Koeltz Antiquariat, Koenigstein TS/BRD.

(27) Trease, G.E., 1966, Text Book of Pharmacognosy, 9th edn., Bailliere, Tindall and Casell Ltd., London.

(28) Wahid, A. and Siddiqui, H.H., 1961, Survey of Drugs- with particular reference to the Arab (Unani) Medicine and Ayurveda, Instt. of Hist. of Medi. and Medical Research, Hamdard Buildings, Delhi.

(29) Wasti, S.A.A.N., 1937,I Tibb-ul-Arab, Part I, Vol. 4, No.2, Shams-ul-Atibba, Lahore, 11-84, II 1938 Tibb-ul-Arab, Part 3, Vol. 5, No.4, Shams-ul-Atibba, Lahore, 9-78.
_____ III 1941, Tibb-ul-Arab, Sp. No. , Vol. 7, No.9, Tibb-ul-Jadid, Lahore, 8-97.

(30) Watt. G., 1972, A Dictionary of the Economic Products of India, Vol. I-IX, Sec. Reprint, Cosmo Publication, Delhi.

(31) The Wealth of India (Raw Materials), 1969, Vol. I-IX, Council of Scientific and Industrial Research, Hill Side Road, New Delhi.

(6) APPENDICES

(A) LIST OF PLANT ORIGIN DRUGS USED IN UNANI SYSTEM.

Sl.No.	Name of the drugs	Botanical names	English names	Parts used
1.	2.	3.	4.	5.
1.	Aak (Madar, Ashar)	i. Calotropis procera (Ait) R.Br. ii. Calotropis gigantea (Linn.) R.Br.Ex Ait.	Mudar Plant	Root, Bark, Flowers " " "
2.	Aamba Haldi	Curcuma amada Roxb.	Mango Ginger	Roots (Rhizome)
3.	Aamla (Amlaj, Sook)	Emblica officinalis Gaertn.	Emblic Myrobalan	Fruits (Pulp, Juice)
4.	Aaqartarha	Anacyclus pyrethrum Dc.	Pellitory Pellitory Root	Roots
5.	Abhal (Aarar, Habb-ul-Aarar)	Juniperus communis Linn.	Juniper Berries	Berries
6.	Adas (Masoor)	Lens esculanta Moench.	Lentil	Seeds
7.	Adrak (Sonth)	Zingiber officinale Rosc.	Ginger (dried), Green Ginger (fresh)	Roots
8.	Adusa (Arusa, Vasaka, Adulasa, Bansa)	Adhatoda vasica Nees.	Vasaka	Roots, Leaves
9.	Afsanteen (Qaisum)	Artemisia absinthium Linn. and other species.	Worm Wood, Southern Wood, Absinthium	Whole plant
10.	Aftimoom (Amarbel, Aakashbel)	i. Cuscuta epithymum Linn. ii. Cassytha filliformis Linn. iii. Cuscuta reflexa Roxb.	Dodder, Cuscuta	Stem, Seeds
11.	Afyun (Khashkhash, Koknar, post)	Papaver somfiferum Linn.	Opium, Poppy	Latex (Gum resin) Seeds, (Rind)
12.	Agar (Ood-e-Hindi)	Aquilaria agallocha Roxb.	Eagle Wood, Aloe Wood	Wood, Gum resin

1.	2.	3.	4.	5.
13.	Ajmod (Tukhm-e-Karafs)	i. Carum roxburghianum Benth. & Hook. = Trachyspermum roxburghianum (Dc.) Sprague. ii. Apium gravolens Linn.	Celery	Fruits
14.	Ajwain (Ajwain Desi, Namkhwah)	Trachyspermum ammi (Linn.) Sprague. Syn. Ptychotis ajowan Dc.	Bishop's Weed, Ajowa Seeds	Fruits
15.	Ajwain Khurasani (Bazr-ul-Banj)	Hyoscyamus niger Linn.	Henbane	Fruits (Seeds)
16.	Akhrot	Juglans regia Linn.	Wal-nut	Fruit pulp (Kernels) Oil Seeds
17.	Alsi (Katan)	Linum usitatissimum Linn.	Lin Seed	Seeds
18.	Alubokhara	i. Prunus institia Linn. ii. Prunus communis Huds.	Prunus -	Fruits
19.	Amalbed (Amal-bel)	Cayratia carnosa (Wall) Gagnek. Syn. Vitis carnosa Wall	-	Root, Leaves, Stem
20.	Amaltas (Khyar-Shambar)	Cassia fistula Linn.	Indian Labernum, [illegible] Golden Shower, Purging Cassia.	Fruits pulp
21.	Ambaj (Aam, Amra, Anba)	Mangifera indica Linn.	Mango	Fruit (Stone)
22.	Ambarbarees (Darhald, Rasaut, Zarishk)	Berberis aristata Dc.	Indian Barberry	Plant extract, Gum resin, Fruits
23.	Amrud	Psidium guajava Linn.	Guava	Fruit
24.	Anannas	Ananas comosus (Linn.) Merr.	Pine Apple	Fruit

1.	2.	3.	4.	5.
25.	Anantamool (Kalesar)	Hemidesmus indicus R.Br.	Hemidesmus, Indian Sarsaparilla Country Sarsaparilla	Stem
26.	Arar (Shireen, Talkh) "Gulnar Farsi"	Punica granatum Linn.	Pomegrante (Male Variety)	Fruit
27.	Anisoon	Pimpinella anisum Linn.	Anise Fruits, Ani Seeds	Fruits
28.	Anjbar	i. Polygonum bistorta Linn. ii. Polygonum aviculare Linn.	Bistort, Adder Wort, Snake Weed	Roots, Fruits
29.	Anjir (Dashti, Khusk) 'Anjra'	Ficus carica Linn.	Fig	Fruits, Stem bark
30.	Ankul (Akola)	Alangium lamarkii Thwaites.		Root Bark, Leaves
31.	Ansal (Jangli piaz, Isqeel)	Urginea indica Kunth.	Squill	Bulbs
32.	Antalsoda (Samandarphal)	Barringtonia acutangula (Linn.) Gaertn	Indian Oak	Fruit (Kernel)
33.	Aprajita (Mazariyun-e-Hindi) Darakht-e-Bekh-e-Hayat)	Clitoria ternatea Linn.	-	Root
34.	Arand (Bedanjir)	Ricinus communis Linn.	Castor Oil Plant, Palma Christy	Fruits (Seeds)
35.	Arand Kharbuza (Papeeta)	Carica papaya Linn.	Papaya	Fruit
36.	Arhar	Cajanus cajan (Linn.) Millsp.	Pigeon Pea	Pulse (Seeds)
37.	Arjun	Terminalia arjuna W.& A.	Arjun	Bark
38.	Aru	Prunus persica Batsch.	Peech	Fruit
39.	Asgand (Tukhm-e-Hayat, Kaknaj)	i. Withania somnifera Dunal. ii. Physalis alkekengi Linn.	Winter Cherry	Root, Seeds

1.	2.	3.	4.	5.
40.	Ashok	Saraca asoca Linn.	Ashok Tree	
41.	Aspaghol	Plantago Ovata Forsk	Plantago, Spogel Seeds	Seeds
42.	Asrol (Chota Chand, Sarpagandha)	Rauwolfia serpentina Benth.ex Kurz	Rauwolfca	Root, Leaves (Juice)
43.	Atis (Bachnakh, Bachnagh, Beesh, Mitha Zahar)	Aconitum heterophyllum Wall.	Aconite, Monk's hood	Roots
44.	Atrilal (Kaliziri, Bakuchi, Somraj)	i. Vernonia anthelmintica Willd. = Centratherum anthelminticum (Willd) Kuntze ii. Anthriscus cerefolium Hoffm.	Vernonia	Seeds
45.	Babchi	Psoralea carylifolia Linn.	Babchi Seeds	Seeds
46.	Babunah (Babunagao)	i. Anthemis nobilis Linn.	Chamomile Flowers, Wild Ivy	Flowers, Roots, Seeds
47.	Bach (Vaj, Vaj-e-Turki Bach Khurasani)	Acorus calamus Linn.	Sweet Flag	Root
48.	Badam (Talkh, Shirin)	Prunus amygdalus Batsch.	Almond (Bitter and Sweet Variety)	Fruit (Kernel)
49.	Badhanjan (Baigan)	Solanum melongena Linn.	Bringal, Egg Plant	Fruits
50.	Badiyan (Saunf)	Foeniculum vulgare Mill.	Fennel	Fruits
51.	Badranjboya (Billilotan)	i. Melisia Parviflora Benth. ii. Nepeta rudralis Ham. and other species	Catmint, Catnip, Mountain Balm	Whole plant
52.	Bagam (Patang)	Caesalpinia sappan Linn.	Sappan Wood	Wood

1.	2.	3.	4.	5.
53.	Bahera (Balela)	Terminalia belerica Roxb.	Beleric Myrobalan	Fruits
54.	Bahmam Safaid	Centaurea behen Linn.	White Behen	Roots
55.	Bahmem Surkh	Salvia haematodes M.	Red Behen	Roots
56.	Bakain	Melia azedarach Linn.	Persian Liliac, Bead Tree	Fruit, Leaves
57.	Bahazur (Baladur, Bhilawan)	Semicarpus anacardium Linn.	Marking Nut Tree	Nut (Gum extract)
58.	Balchar (Sumbul-Tib) Jatamansi	Nardostachys jatamansi Dc. Syn. Valeriana Jatamansi Dc.	Indian Valerian	Roots
59.	Balsu	Canthium parviflorum Lam.	-	Root, Bark
60.	Banafsha	Viola odorata Linn.	Sweet Violet	Whole Plant, Flowers
61.	Banda	Viscum album Linn.	-	Berry
62.	Bans (Bansa, Tabasheer)	Bambusa arundinacea Willd.	Bamboo Manna	Cilicate deposit
63.	Bantooma (Kafi)	Coffea arabica Linn.	Coffee	Seeds
64.	Bamiyoh (Bhindi, Mushkdana)	i. Abelmoschus esculantus Linn. Lady's Finger ii. Abelmoschus moschatus Moench.		Capsules, Seeds
65.	Baobarang (Babrang)	Embelia ribes Burm.f.	Embelia	Berries
66.	Baokhamba (Araya, Kumbhi)	Careya arborea Roxb.	-	-
67.	Bargad	Ficus bengalensis Linn.	Banyan Tree	Bark, Root, Extract

1.	2.	3.	4.	5.
68.	Barna	Crataeva religiosa Hook. f. = C. nurvala Buch. Ham.	-	Leaves
69.	Bashma (Chaksu)	Cassia absus Linn.	-	Seeds, Leaves
70.	Bathua	Chenopodium album Linn.	Chenopodium	Whole plant
71.	Bedmushk (Khilaf, Kabr, Kabra)	i. Salix caprea Linn. ii. Capparis spinosa Linn.	Capers, Willow	Root bark, Leaves (extract)
72.	Bed Sada	Salix alba Linn.	Common Willow	Root bark, Leaves (extract)
73.	Bel (Belgiri)	Aegle marmelos Corr.	Bengal Quince, Bael Tree	Fruits
74.	Beteekh-e-Hindi (Tarbuz)	Citrullus Vulgaris Schrad.	Water melon	Fruit, Seeds
75.	Bhang (Charas, Ganja)	Cannabis indica Linn.	Cannabis, Indian Hemp Plant	Flowering tops (Ganja), Leaves (Bhang), Resin (Charas)
76.	Bhangra	Eclipta alba Hassk.	Black Bhangra	Whole Plant, Leaves
77.	Bharangi	i. Clerodendrum serratum (Linn.) Moon	Glory Tree (Blue flowered)	Leaves
		ii. Brucea quassioides Ham.	Beetle Killer	
78.	Bhojpatra (Bhurja)	Betula utilis D. Don.	-	Bark
79.	Bhumiamla (Bhuiamla)	Phyllanthus niruri Linn.	-	Whole plant
80.	Bhoot Keshi	Corydalis govaniana Wall	-	Root

1.	2.	3	4.	5.
81.	Bhophali	Corchorus depressus (Linn.) Christensen	-	Plant, leaves, Seeds
82.	Bidarikand (Bilaikand)	Ipomoea digitata Linn. = Ipomoea paniculata R.Br.	Ipomoea	Roots
83.	Bidhara (Badhare)	Gmelina asiatica Linn.	-	Root
84.	Bihi (Behidana)	Cydonia oblonga Mill.	Quince	Seeds
85.	Bijbend (Jangli palak)	Rumex maritimus Linn.	Sorrel	Plant, leaves, Seeds
86.	Bindel (Ghiatoroi)	Luffa echinata Roxb.	-	Seeds
87.	Biranj (Chawal)	Oryza sativa Linn.	Rice	Grains
88.	Brahmdandi	i. Tricholepis glabberrima Dc. ii. Tricholepis angustifolia Dc. iii. Lamprachaenium microcephalum Benth.	-	Whole Plant
89.	Buzidan (Khusyat-us-Saleb, Salab)	Orchis latifolia Linn.	Salep, Orchid	Tubers
90.	Brahmi	i. Herpestis monniera (linn.) H.B.& K. ii. Centella asiatica (Linn.) Urban	Penny Wort	Plant, Leaves
91.	Bukunbuti (Bukan)	i. Lippia nodiflora Misch. ii. Phyla nodiflora Linn.	-	Plant
92.	Bunduq-e-Hindi (Ritha)	Sapindus trifoliatus Linn.	Soap Nut	Nut
93.	Chachinda	Trichosanthus anguina Linn.	-	Fruit (Seeds)
94.	Chaey (Chai)	Camellia sinensis (Linn.) Kuntze.	Tea	Leaves
95.	Chakotra	Citrus maxima (Burm.) Merr.	Big Lemon	Fruit

1.	2.	3.	4.	5.
96.	Chameli	Jasminum officinale Linn. Var Grandiflorum Bailey	Jasmine	Flowers, leaves
97.	Champa	Michelia champaca Linn.	-	Flowers
98.	Chana (Nakhud)	Cicer arietinum Linn.	Gram	Seeds
99.	Chaulai (Cheulai Sag, Bustan Abroz)	Amaranthus mangostanus Linn.	-	Root, leaves, Plant
100.	Chaulmugra (Mugra)	Hydnocarpus Kurzii (King) Warb.	-	Seeds, Fruit
101.	Charila (Chadila)	Parmelia perlata Ach.	Lichen	Whole Litchen
102.	Chiragond (Palaspara, Palas, Dhak, Cul-a-Tesu)	Butea monosperma (Lam.) Kuntze.	Flame of the forest, Bengal Kino, Bastard Kino	Gum, Flowers, Bark.
103.	Chikoo	Achras zapota Linn.	Chikoo	Fruits
104.	China ghas	Gelidium cartilaginum Gaill.	Agar, China grass	Algae
105.	Chinar	Plantanus orientalis Linn.	Oak	Plant (Gum-resin)
106.	Chir (Sanobar)	Pinus longifolia Roxb.	Pine	Plant (Gum-resin)
107.	Chiraita	Swertia chiraita Buch-Ham.	Chiraita, Indian Gentian	Whole Plant
108.	Chirchita	Lycium barbarum Linn.	-	Leaves, Berries
109.	Chironji	Buchnania lanzan Spreng.	Buchnan Fruit	Fruits (Seeds)
110.	Chitalakdi (Shitraj, Chitrak)	Plumbago zeylanica Linn.	Plumbago	Wood
111.	Chobchini (Chob)	Smilax China Linn.	China Root	Root
112.	Chohara (Pind Khajoor, Khajoor)	Phoenix dactilifera Linn.	Date Tree	Fruits

1.	2.	3.	4.	5.
113.	Chuimui (Lajjalu, Lajmuli)	Mimosa pudica Linn.	Touch-me-not Plant	Plant
114.	Dadmardan	Cassia alata Linn.	-	Leaves, Plant
115.	Dammul-akhwain (Bijasar)	i. Dracaena cinnabari Balf.f. ii. Pterocarpus marsupium Roxb.	Dragon's Blood, Indian Kino	Gum (Secretion)
116.	Danti (Jamal gota, Habb-us-salateen)	Croton tiglium Linn.	Purging Croton	Plant, Seeds
117.	Deona	Artemisia pallens Linn.	-	Plant
118.	Darchini	Cinnamomum zeylanicum Blum.	Cinnamon	Bark
119.	Darhald (Kasmal)	1. Berberis lycium Royle.	Indian Barbery	Plant, extract
120.	Daruhaj Aqrab (Aqrabi)	Doronicum hookerii Hook.f.	Leopard's Bane	Roots
121.	Dastamboya (Kappor Kachri)	Hedychium spicatum Ham.ex Benth	-	Root stock
122.	Deodar (Devdar)	Cedrus deodara (Roxb.) Loud.	Deodar Tree	Wood
123.	Dhaniya (Kishneez)	Coriandrum sativum Linn.	Coriander	Fruits
124.	Dhatura	Datura alba Nees. and other species	Green Thorn Apple	Seeds, Leaves, extract
125.	Dhava (Gul-e-Dhava)	1. Anogeissus latifolia Wall. ii. Grislea tomentosa Wat.	Button Tree	Flowers
126.	Dhaulsamudra	Leea macrophylla Rox.ex Hormen	-	Root
127.	Dhoop (Kaladamar)	Canarium strictum Roxb.	Black Dammer, Elemi Tree	Gum-resin
128.	Dikamali	Gardenia gummifera Linn.	Gummy Cape Jasmine	Resin

1.	2.	3.	4.	5.
129.	Doob (Doob-ghas)	Cynodon dactylon (Linn.) Pers.	Doob grass	Root (infusion)
130	Dudhi (Khurd)	i. Euphorbia hirta Linn.	Euphorbium, Australian Asthma Weed	Whole plant
		ii. Leptadenia reticulata W.& A.		
131.	Elwa (Ghikwar, Sibr, Musabbar)	Aloe litoralis Koeng and other species	Aloe	Extract, leaves
132.	Ermul (Sudab, Barg-e-Sudab)	Ruta graveolens Linn.	Garden Rue	Leaves
133.	Falsa	Grewia asiatica Linn.	-	Fruits
134.	Farash (Jhau)	Tamarix aphylla Karst.	Tamarisk	Galls on the plant
135.	Farasiyun (Faristariyun, Tagar)	i. Marrubium vulgare Linn.	Indian Valerian,	Root
		ii. Valleriana wallichii Dc.	Valerian	
136.	Farid Buti (Gada gokhru)	i. Pedallium murex Linn.	Large Caltrops	Fruits
		ii. Farsetia aegyptica Turra.	"	"
137.	Filfilmoya (Pipplemool)	Piper longum Linn.	Long Papper	Berries, Roots
138.	Fufal (Chalia, Supari)	Areca catechu Linn.	Areca Nut, Betel Nut	Nuts
139.	Gajar (Gazar)	Daucus carpota Linn.	Carrot	Seeds, Root
140.	Gajpipal	Scindapsus officinalis Schott.	-	Fruit
141.	Ganda biroza (Biroza, Behroza)	i. Ferula galbaniflua Boiss.et Buhse.	Galbanum	Gum-resin
		ii. Pinus longifolia Roxb.	Pine	"

1.	2.	3.	4.	5.
142.	Gandana	i.Allium egcalonicum Linn. ii.Asphodalus tenuifolius Cav.	Shallot -	Seeds (extract)
143.	Gaozaban	i.Borago officinalis Linn. ii. Caccinia glauca Savi iii.Onosmea bracteatum Wall.	Cow's Tongue plant	Leaves, Flowers
144.	Ghariqoon	i. Polyporus officinalis Fries ii.Agaricus campestris Linn.	Mushroom	Mushroom
145.	Ghongchi	Abrus precatorius Linn.	Country Liquorice Bush	Seeds
146.	Gilo(Sat-e-Gilo)	Tinospora cordifolia (Willd) Miers.	Moon Creeper, Bile Killer	Stem(extract)
147.	Gobhi	Elephantopus scaber Linn.	Cauli-flower	Flower, Seeds
148.	Gogul (Muqil)	Balsamodendron Mukul Hook.ex. Stocks = Commiphora mukul(Hook.ex Stocks) Engl.	Bdellium	Gum resin
149.	Gokhru (Chota)	Tribulus terristris Linn.	Small Caltrops, Caltrops	Fruit(Seeds)
150.	Goma	Leucas cephalotes Spreng.	White dead Nettle	Roots, leaves
151.	Gondi	Cordia rothii Roem & Schult.		
152.	Gondni	Bridelia montana Willd.	-	Plant
153.	Goolar	Ficus glomerata Roxb	Country Fig Tree, Insec Fig, Gum Fig	Fruit
154.	Gorakh Imli	Adansonia digitata Linn.	-	Fruit pulp, Leaves
155.	Gulab (Ward, Gul-e-Surkh)	Rosa damascena Mill.	Rose	Flowers
156.	Gul-e-Abbas	Mirabilis Jalapa Linn.	-	Root, Leaves

1.	2.	3.	4.	5.
157.	Gul chandni (Gul-e-Chini, Gul-e-Nasri, Gulchin, Aschin)	i. Ipomoea bonanax Linn. ii. Chrysanthemum roxburghii Desv. iii. Plumeria rubra Linn.	Chrysanthemum	Flowers
158.	Gul-e-Kachkan (Kheng-ke-Phool)	Hibiscus cannabinus Linn.	Indian Hemp, Cannabis	Flowers
159.	Gulkhaira	Amaranthus paniculatus Linn.	-	Flowers
160.	Gul-e-Dopahria	Pentapetes phoenicea Linn.	-	Flowers
161.	Gul-e-Gurhal	Hibiscus rosasinensis Linn.	Shoe flower	Flowers
162.	Gurjan	Dipterocarpus turbinatus Gaertn.	Gurjan Balsam	Exudation, Wood oil
163.	Gurmar (Gurmar buti, Meda Singhi)	Gymnema sylvestris R.Br.	-	Leaves, Root
164.	Gwar	Cyamopsis tetragonoloba Taub	-	Fruit
165.	Habb-ul-Ban	i. Melia azedarach ii. Moringa pterigosperma Gaertn. iii. Tamarix gallica Linn. iv. Terminalia chebula Retz. v. Salix babylonica Linn. vi. Salix aegyptica	Ban Tree	Nut
166.	Habb-ul-Ghar	Laurus nobilis Linn.	Laurel	Berries
167.	Habb-ul-Neel (Kaladana)	i. Ipomoea hederacea (Linn.) Jacq ii. Indigofera tinctoria Linn.	Pharbitis Nil Indigo	Seeds

1.	2.	3.	4.	5.
168.	Habb-ul-Gult (Kulthi)	Dolichos biflorus Linn.	Green Gram	Pulse (Seeds)
169.	Habb-ul-Semena (Simma)	Buchanania angustifolia Roxb.	Buchnan Mango, Cudappah Almond	Fruits
170.	Habb-ul-Rashad	Lepidium sativum Linn.	-	Seeds
171.	Hadaq (Kateli, Katei,	Solanum xanthocarpum Schrod & Wendl.	Indian Solanum	Berries
172.	Hingot (Hingon-Ka-ped)	Balanites aegyptiaca (Linn.) Delile	-	Bark, Unripe fruits & leaves
173.	Haldi	Curcuma longa Linn.	Turmeric	Rhizome
174.	Haldu	Adina cordifolia (Roxb.) & Benth & Hook.f.	-	Bark, Juice
175.	Halela (Had)	Terminalia chebula Retz.	Chebulic Myrobalan	Fruits
176.	Halyun (Halgun, Satawar)	Asparagus officinalis Linn.	Asparagus	Roots
177.	Hansraj (Parsiavushan)	Adiantum capillus-veneris Linn.	Fern	Fern (Frond)
178.	Harsinghar	Nyctanthes arbor-tristis Linn.	-	Leaves (decoction)
179.	Hattajori (Hatjod)	Vitis quadrangularis Wall.	-	Leaves, Young Shoots, Stem (decoction)
180.	Hina (Henhdi)	Lawsonia innermis Linn.	Henna	Leaves, Flowers
181.	Hing (Hilteet)	Ferula foetida Regel.	Asafoetida	Gum-resin
182.	Hirankhuri (Phogali)	Corchorus fascicularis Lam.	-	Plant
183.	Hulhul (Hurhur, Hurbera)	i. Cleome icosandra Linn.	Wild Mustard	Seed
		ii. Cleome monophylla Linn.		

1.	2.	3.	4.	5.
184.	Harmal (Ispand)	i. Peganum harmala Linn.	Garden Rue	Seeds
		ii. Ruta Graveolens Linn.	Wild Rue	"
185.	Ilaichi Khurd (Heel Khurd)	Elettaria cardamomum Maton.	Lesser Cardamom	Fruits
186.	Ilaichi Kalan (Heel Kalan)	Amomum subulatum Roxb.	Greater Cardamom	"
187.	Inderjao Shirin (Lisan-ul-Asafir, Zaban-e-Kunjashk)	Wrightia tinctoria R.Br.	Dyer's Oleander, Blue dyeing Rosbery	Seeds, Bark
188.	Inderjao Talkh (Kurchi)	Holarrhena antidysenterica Wall.	Conesse Bark, Kurchi Bark	Bark
189.	Indrayan (Hanzal, Kharbuza-e-Talkh)	Citrullus colocynthis Schrad.	Colocynth	Fruit (pulp)
190.	Isfanakh (Chugender)	i. Beta Vulgaris Linn.	Beet Root	Root
		ii. Spinacia oleracea Linn.	Spinac	Leaves
191.	Isharmool (Zaravand-e-Hindi)	Aristolochia indica Linn.	-	Root
192.	Ispast	Trifolium alexandericum Linn.	Trefoil, Berseem, Clover	Seeds
193.	Izkhar (Rusa)	i. Andropogon maritima Roxb.	Lemon Grass	Leaves
		ii. Cymbopogan jwarancusa Schult.		
194.	Jalap	Ipomoea purga Wayne.	Jalap	Roots
195.	Jaiphal, Javetri (Jauzbowa)	Myristica fragrans Houtt.	Nutmeg, Mace	Fruits, Petals
196.	Jaldhaniya	Ranunculus aquatilis Linn.	-	Plant
197.	Jalkumbhi	Pistia stratiotes Linn.	-	Whole Plant

1.	2.	3.	4.	5.
198.	Jalneem	Lycopus europeaus Linn.	-	Whole plant
199.	Jamalgota (Habb-us-Salateen)	Croton tiglium Linn.	Purging Croton	Seeds
200.	Jamun (Gulabjamun)	i. Eugenia jambolana Lam.	Black Plum	Fruits
201.		ii. Eugenia jambos Linn.		"
202.	Jau (Shaeer)	Hordeum vulgare Linn.	Barley	Fruits (grains)
203.	Jharhald	Coscinium fenestratum (Gaertn)	-	Wood
204.	Jhunjhunia	Crotolaria verrucosa Linn.	-	Leaves
205.	Jiggni (Jingon, Kashmala)	Launea grandis (Dennst) Engl. Syn. Odina Woodier Roxb.	-	Plant
206.	Jivaputra (Putranjiva)	Putranjiva roxburghil Wall.	-	Leaves, Fruits
	Jiwanti (Dodhi, Jayanti)	i. Leptadenia reticulata (Retz.) W. & A	-	Plant
		ii. Sesbania sesban (Linn.) Merr.	-	"
		iii. Sesbania bispinosa (Jack) Fawcett & Rendle.		
207.	Juhi	Delphinium vestitum Wall.	Delphinium	Leaves
208.	Kabebchini (Kankol Mirch)	i. Piper cubeba Linn.f. = Cubeba officinalis Miquel.	Cubebs	Fruits (Berries)
209.	Kachnal (Apta, Kachnar)	i. Bauhenia vericgata Linn.	Mountain Ebony	Flowers
		ii. Bauhenia reacemosa Lam.		
210.	Kadi (Deora, Armaq)	Pandanus tectorius Soland.	Screw pine	Roots, Leaves, Inflorescence.

1.	2.	3.	4.	5.
211.	Kaddu (Talkh, Shirin)	Cucurbita maxima Dutch.	Pumkin	Fruit (Pulp)
212.	Kafoor	Cinnamomnum camphora Nees.	Camphor	Extract
213.	Kahruba (Inqitriyun)	Pinus succinifera Linn.	Succinum, Amber	Fossil-resin
214.	Kahu (Tukhm-e-Kahu)	Lactuca sativa Linn.	Lettuce	Seeds
215.	Kaifal	Myrica nagi Thunb.	Box Myrtle	Fruits, Bark
216.	Kaju	Anacardium occidentale Linn.	Cashew Nut	Fruits (Kernel)
217.	Kakjinga	Leea aequata Linn.	-	Tubers, Stem
218.	Kakmari	Anamirta cocculus W & A.	-	Seeds
219.	Kakra Singhi	Rhus succedenea Linn.	-	Galls
220.	Kakronda (Kamafitus, Jangli Kasni, Karonda)	i. Blumea aurita Dc. ii. Blumea balsamifera Dc.	-	Plant
221.	Kalazira (Kalonji, Kalisiri)	Nigella sativa Linn.	-	Seeds
222.	Kalmegh (Kiryat)	Andrographis paniculata Nees.	Kreat	Plant, Root, Leaves
223.	Kalmisak	Ipomoea reptens (Linn.) Por.	-	Plant, Juice
224.	Kamila (Olmbeel)	Mallotus philippiensis Muell.	Kamila, Monkey's Face Tree	Pubescence of capsule
225.	Kamrakh	Averrhoea carambola Linn.	-	Fruits
226.	Kamrup	Ficus retusa Linn.	-	Root bark, Juice
227.	Kanduri (Kanduri-Ki-bel, Kabr-e-Hindi)	Coccinia indica W & A	-	Root, Leaves (Juice)
228.	Kaner	Nerium indicum Mill.	Oleander	Root, Plant

1.	2.	3.	4.	5.
229.	Kanghi	Abutilon indicum Linn.	Country Mallow	Bark, leaves
230.	Kangni	Panicum italicum Linn. = Setaria italica Beauv.	-	Grains
231.	Kankhari	Capparis sepiaria Linn.	-	Plant
232.	Kanwal (Kanwal-gatta, Nilofar)	i. Nelumbo nucifera Gaertn. ii. Nymphea alba Linn.	Lotus	Flowers, Fruits, Seeds
233.	Kapas (Binola, Qutn)	Gossypium barbadense Linn. and other species	Cotton	Seeds, Oil
234.	Kapoor-Kachri	Hedychium spicatum Smith.	-	Roots
235.	Kar (Qurtum)	Carthamus tinctorius Linn.	-	Seeds
236.	Karanj	Pongamia glabra Vent	Indian Beech Physic	Seeds
237.	Karanjwa (Akitmukit)	Caesalpinia bonducella Linn.	Physic Nut, Mulacca Bean, Nicker Nut, Bonduc Nut	Nuts
238.	Karela (Qissa-ul-Barri)	Momordica charantia Linn.	Bitter Gourd	Fruit (Pulp)
239.	Karna (Khatta)	Citrus auranticum Linn. Var. Bigardia	Sour Orange	Fruits (Rind)
240.	Kaseru	Scirpus Kysoor Roxb.	Kysoor	Rhizomes (Tuber)
241.	Kasni (Bazr-ul-Hindba)	Cichorium intybus Linn.	Endive, Chicory Seeds	Seeds
242.	Kasondi	Cassia occidentalis Linn.	-	Plant, Leaves
243.	Kathal	Artocarpus heterophylla Lam.	Jack Fruit	Fruit, bark.
244.	Katira	Sterculia urens Roxb.	Indian Tragacanth, Gum Gum Katira	

1.	2.	3.	4.	5.
245.	Kattha (Khair, Khadira)	Acacia catechu Wild.	Catechu Plant	Gum-resin
246.	[illegible] Kavitha	Feronia limonia (Linn.) Swingle	-	Plant
247.	Kharbuza	Cucumis melo Linn.	Sweet Melon	Fruit, Seeds
248.	Kharenti (Bala)	Sida Cordifolia Linn.		Root bark, Seeds
249.	Khas	Vetiveria zizanioides (Linn.) Nash	Vetiver, Cuscus	Roots, Grass (Stem
250.	Khatmi (Gul-e-Khairo)	Althea officinalis Linn.	Marsh Mallow, Hollyhock	Seeds
251.	Khira (Khiyar, Kisse)	Cucumis sativus Linn.	Cucumber	Seeds (Pulp).
252.	Khirni	Manilkara Kauki Dub.	-	Fruit (Seeds)
253.	Khubani	Prunus armeniaca Linn.	-	Fruit (Seeds)
254.	Khubbe (Khaksi, Khub Kalan)	Sisymbrium irio Linn.	-	Seeds.
255.	Khubbazi	Malve sylvestris Linn.	Common Mallow	Seeds.
256.	Khulenjan	Alpinia galanga Linn.	Galangal	Rhizome
257.	Kirmala	Artemisia maritima Linn.	-	Roots, Plant
258.	Kishmish (Angur, Moveez, Munaqqe, Bedana)	Vitis Vinifera Linn.	Raisins	Fruits
259.	Kokam (Kokam-Ka-Tel)	Garcinia indica Choisy.	Cocum Butter	Gum-resin
260.	Kouch	Mucuna prurita Hook.	Gamboge Cow-hedge	pods
261.	Kachla (Izaragi)	Strychnos nux-vomica Linn.	Nux-vomica	Seeds.
262.	Kuppi	Acalypha indica Linn.	-	Plant
263.	Kuzras (Aab-e-Kurras)	Cuminum cyminum Linn.	Careway	Fruits

1.	2.	3.	4.	5.
264.	Kutki (Kharbaq Hindi)	Picrorrhiza Kurroa Royle.	Indian Hellebore	Roots
265.	Laung (Qaranful)	Syzygium aromaticum (Linn.) Merr & L.M.Perry.	Cloves	Flower Buds.
266.	Lahsan (Seer)	Allium sativum Linn.	Garlic	Bulb
267.	Lemu (Nebu, Nimbu, Kaghzi-Nebu, Sharbati Nebu)	i. Citrus medica Linn. var. acida	Lemon (Kaghzi Nibu)	Fruit (Juice)
		ii. Citrus aurantium Linn. var. bergamia	Lemon (Nibu, Nimbu)	Fruit (Juice)
		iii. Citrus medica Linn. var. limetta W. & A.	Lemon (Mitha Nibu)	"
268.	Lisan-ul-Asafir (Inderjao Shireen)	Wrightia tinctoria R.Br.	Dayer's oleander, Blue dying Rosbery	Bark
269.	Lichi	Litchi chinensis Sonner.	Litchi Plant	Fruits, Leaves.
270.	Lingdonda (Akash gadda, Jangli or Badi Kakdi)	Bryonopsis laciniosa (Linn.) Naud. Syn. Brionia laciniosa Linn.	-	Plant, Leaves.
271.	Loban (Salai, Kundur)	i. Boswelia serrata Roxb.	Olibanum, Benzoin	Gum resin.
		ii. Styrex benzoin Dryander.	"	"
272.	Locat	Eriobotrya japonica Lindl.	-	Fruit
273.	Lobia	Vigna catjang Walp.	-	Pods (seeds)
274.	Lodhpathani (Pathanilodh)	Symplocos racemosa Roxb.	Lodh Tree	Bark
275.	Lonia (Khurfa)	i. Portulaca oleracea Linn.	Portulaca	Plant, Fresh Leaves, Seeds.
		ii. Portulaca quadrifida Linn.		
276.	Luffa	Atropa belladona M.Roem	Belladona, Deadly Night shade	Seeds
277.	Lutukari	Ranunculus sceleratus Linn.		Plant, Leaves

1.	2.	3.	4.	5.
278.	Madmalti (Madmanti, Madanmast)	i. Wattakaka Volubilis (Linn.) Stapf. Syn. Marsdenia volubilis T.Cook ii. Artobotrys, odoratissima R.Br.	-	Plant, Leaves, Roots and tender stalk
279.	Maeen (Kalan, Khurd)	i. Tamarix gallica Linn.	Tamarisk	Galls (Bigger)
		ii. Tamarix orientalis Vahl	"	" (Smaller)
280.	Maida Lakri (Mughas-e-Hindi, Mughas-e-Baghdadi)	i. Tetranthera roxburghii Nees. ii. Litsea sebifera Pers.	-	Wood
281.	Mainphal (Jauz-ul-Qai)	Randia dumetorum Lam.	Common Emetic Nut, poison Fruit.	Nut
282.	Makhana	Euryale ferox Salisb	-	Seeds
283.	Makoh (Annab-us-Salib)	Solanum nigrum Linn.	Black Night shade	Berries
284.	Makka (Makai, Bhutta)	Zea mays Linn.	Corn.	Seeds (Grain)
285.	Malkangani	Celastrus paniculatus Willd	-	Seeds.
286.	Malti	Aganosma dichotoma (Roth) K.Schun	-	Plant
287.	Mamiran (Mamira)	Coptis teeta Wall.	Coptis	Phizome
288.	Mandua (Ragi)	Eleucine Coracana Gaertn.	-	Grains
289.	Mankand	Eulophia nuda Lindl.	-	Tubers
290.	Marorphali	Helectris isora Linn.	Indian Screw Tree	Fruits
291.	Marva (Mooli)	Raphanus sativus Linn.	Radish	Roots
292.	Mastagi (Kundur-e-Rumi, Mastagi-e-Rumi)	Pistacia lentiscus Linn.	Mastich	Gun-resin
293.	Matar (Satla)	Pisum sativum Linn.	Pea, Garden Pea	Seeds
294.	Matupulug (Sugandhbala)	Pavonia odorata Willd	-	Roots
295.	Mazu (Mazuphal)	Quercus infectoria Oliv.	Oak	Galls

1.	2.	3.	4.	5.
296.	Madhvi (Madhwi)	Hiptage benghalensis Kurz.	Rosallear, Red Sorrel	Plant.
297.	Methi (Hulba)	Trigonella foenum-graecum Roxb.	Fenugreek	Seeds.
298.	Mirch Siyah (Kali Mirch, Gol Mirch, Filfil Siyah)	Piper nigrum Linn.	Black Pepper	Berries (Fruits)
299.	Mirch Surkh (Lal Mirch, Filfil Surkh)	Capsicum annum Linn.	Chilli, Red Pepper.	Fruits
300.	Mishktremasheeh	Zizyphus tenuior Linn.	-	Seeds (Fruits)
301.	Mochares (Sembhal, Gul-e-Tesu)	i. Bombax malabaricum Dc. ii. Salmalia malabarica schoot & Endl.	Silk Cotton Tree Red Cotton Tree	Seeds, Flowers, Bark
302.	Mogra (Gul-e-Safed, Motia-Yasmeen)	Jasminum sambac Aiton	Mogra	Flowers
303.	Molsiri	i. Mimusops elengi Linn. ii. Xasia aculeata Lour.	-	Flowers
304.	Moong	Phaseolus mungo Linn.	-	Pulse (Seeds)
305.	Moongphali	Arachis hypogea Linn.	Ground Nut	Nuts (Seeds)
306.	Morpankhi	Actiniopteris dichotoma Bedd.	Fern.	Fronds.
307.	Moth (Nagarmotha, Sad Kufi)	i. Cyperus rotundus Linn. ii. Cyperus pertenuis Roxb.	- -	Roots (Tubers) Roots (Tubers)
308.	Moz (Kela)	Musa paradisiaca Linn.	Banana, Plantain Tree	Fruit
309.	Mulaithi (Rub-us-soos, Asl-us-soos)	Glycyrrhiza glabra Linn.	Liquorice	Roots
310.	Muleem	Gloriosa superba Linn.	-	Root

1.	2.	3.	4.	5.
311.	Mundi (Kamazariyus)	Sphaeranthus indicus Willd	-	Inflorescence (head)
312.	Mushkdana (Habb-ul-Mushk)	Abelmoschus moschatus Moen.	-	Seeds
313.	Musli Safed (Shaqaq-ul-Hindi, Satawar)	i. Asparagus adsendens Roxb. " Sarmentosus Linn.	White Musale	Root
314.	Musli Siyah	Curculigo orchioides Gaertn.	Black Musale	Root
315.	Nagdauna (Nagdaman) Biranjasif, Pindar, Nogdaun)	i. Artemisia pallens ii. " Vulgaris Linn. iii. Crinum asiaticum	- -	Plant, Flowers
316.	Nagphan (Nagphana)	Cactus indicus Roxb.	Cactus	Plant.
317.	Nakchikni (Pittapishika)	i. Hoya viridiflora R.Br. ii. Centipida minima (Linn.) R.Br. Asches	- -	- Plant
318.	Naranj (Santara, Narangi)	Citrus aurantium Linn	Orange	Fruit (Pulp)
319.	Naori (Harfarouri)	Phyllanthus acidus Skeels	-	Fruit
320.	Nariyal (Narjeel)	Cocos nucifera Linn.	Coconut	Fruit (Pulp)
321.	Narjeel Daryaee	Lodoicea maldivica Pers.	Sea Coconut	Fruit (pulp)
322.	Narmushk (Nagkesar, Nageswar)	Mesua ferrea Linn.	Iron wood Tree	Flowers
323.	Nashpati (Nakh)	Pyrus communis Linn.	Pear	Fruit
324.	Neem (Nimba, Asad Darakht)	Azadirechta indica A.Juss	Margosa tree, Neem Tree.	Bark, Leaves, Gum.
325.	Neem Mitha (Maharukha, Maharimba)	Ailanthus excelsa Roxb.	-	" "
326.	Nigandbabri (Sambhalu, Nirgundi) Panjangasht)	Vitex negundo Linn.	Ches Nut Tree	Seeds, Leaves
327.	Nilkanthi (Shahdevi)	Chrozophora prostrata Dalz.	-	Plant

1.	2.	3.	4.	5.
328.	Nirbasi (Nirbansi, Nirvisha, Atis, Jadwar-e-Hindi)	Aconitum heterophyllum Wall. and other species.	Aconite	Root.
329.	Nirmali	Strychnos potatorum Linn. f.	-	Seeds
330.	Padmakh	Prunus ceracoides D.Don	-	Kernel
331.	Pan (Tanbol)	Piper bettle Linn.	Betel Leaves	Leaves, Root.
332.	Pakhanbhed (Juntiyana, Gul-e-Ghafis)	i. Jentiana Kuroo Royle. ii. " oliveiri Griseb. iii. Bergenia ligulata (Wall) Engl.	Gentian Root " "	Root " "
333.	Palak	Spinacea oleracea Linn.	Spinack	Leaves
334.	Palwal (Parwal)	Tricosanthus dioica Roxb.	-	Leaves, Root
335.	Pangarh (Pangra)	Erythrina indica Linn.	-	Plant
336.	Paniamla (Paniala, Talispatri)	i. Bischofia javanica Blume. ii. Flacourtia jangomas (Lour) Raeusch	- -	Leaves, Root
337.	Paraspipal	Thespesia populnea Soland ex Correa	-	Fruit, Root bark
338.	Parpatak	Glossocardia bosvellia Dc.	-	Plant
339.	Patha	Cissampelos pereira Linn.	-	Root
340.	Patharphodi	Didymocarpus pedicellata R.Br.	-	Leaves
341.	Pathri	Launea pinnatifida Cass.	-	Plant
342.	Petha	i. Benincasa hispida (Thunb) Cogn.	White Melon Gourd	Fruit, Pulp, Seed
343.	Phoot (Kachri)	Cucumis melo Var. momordica Duthie & Fuller.	-	Fruit (Rind)
344.	Piabansa (Vajradanti)	Barleria prionitis Linn.	-	Leaves.

1.	2.	3.	4.	5.
345.	Pilkhan	Ficus lacor Buch-Ham.	-	Bark
346.	Pilu(Miswak)	Salvadora Wightiana Pbanch.	Pilu wood	Wood
347.	Pindalu	i. Randia uliginosa Dc. ii. Dioscorea alata Linn.	-	Fruits, Root
388.	Pipal(Pipal darakht)	Ficus religiosa Linn.	-	Bark, Fruit,
349.	Pippali(Pippalamool, Filfil Daraz, Filfil Moya)	Piper longum Linn.	Long pepper	Root, Berries
350.	Pista	Pistacia vera Linn.	Pistachio Nut	Fruits
351.	Piaz	Allium cepa Linn.	Onion	Bulb
352.	Podinah (Hana)	Mentha arvensis Linn.	Mint, Marsh Mint	Leaves, Extract
353.	Poi(Lalbachlu)	Basella rubra Linn.	-	Leaves.
354.	Qalqash(Qulqas, Arvi)	Colocasia antiquarum Schott	Colocasia	Root(Rhizome)
355.	Qasb-us-Supkar(Naishkar)	Saccharum officinarum Linn.	Sugarcane	Plant
356.	Qilqil(Habb-ul-Qilqil)	Cardiospermum helicacabum Linn.	-	Seeds
357.	Qust(Kuth)	i. Aucklandia costus Falc. ii. Saussurea lappa C.B. Clarke	-	Root
358.	Raal(Sandaros, Sagedamar)	i. Shorea robusta Gaertn f. ii. Vateria indica Linn.	- Piny, White Damar	Resin "
359.	Rai(Khardal, Ispandan)	i. Erassica juncea(Linn.)Czern & Coss ii. " Cernua (Thumb) Forbes & Hemsley	Indian Mustard "	Seeds.
360.	Rampatri	Myristica malabarica Lam.	Malabar Nutmeg	Nut, Bark

1.	2.	3.	4.	5.
361.	Ramphal	Annona reticulata Linn.	-	Fruit
362.	Ramsar	Vallaris solanacea O.Ktze	-	Milky juice
363.	Rasna	Vanda roxburghii R.Br.	-	Root, Leaves,
364.	Ratalu	Dioscorea bulbifera Linn.	-	Leaves, Flowers, Root
365.	Ratanpara (Ratanpurus)	Ionidium enneaspermum DC.	-	Whole plant
366.	Samak	Echinochloa crus-galli Beauv.	-	Plant
367.	Samaq (Sumaq)	Rhus coriaria Linn.	-	Seeds
368.	Sana	Cassia angustifolia Vahl.	Senna, Tinna-Valley Senna.	Leaves
369.	Sandal Safaid	Santalum album Linn.	Sandal Wood	Wood
370.	Sandal Surkh	Pterocarpus santalinus Linn.f.	Red Sandal Wood	Wood
371.	Sandarus	Trachylobium hornemannuanum Hayne	-	Fossil Resin
372.	Sankhaholi (Sankhapushpi)	Evolvulus alsinoides Linn.	-	Plant Flowers
373.	Sansani	Calotropis juncea	-	Flowers, Plant
374.	Sapistan (Lasoda)	Cordia latifolia Roxb.	Small Sebesten	Fruit
375.	Saqmonia	Convolvulus scammonia Linn.	Scammony	Gum-resin,
376.	Saras (Siris, Weda, Sofed Siras)	Albizia procera (Rox.) Benth	-	Leaves, Seeds
377.	Sarkanda	Saccharun arundinaceum Retz.	-	Root
378.	Sarpakshi	Ophiorrhiza mungos Linn.	-	Root

1.	2.	3.	4.	5.
379.	Sarpan (Nagkesar)	Ochrocarpus Longifolius Benth & Hook f.	-	Flower buds
380.	Sarphooka (Sarphonka)	Tephrozia purpurea Pers.	-	Leaves, Flowers
381.	Sarsavali (Lalsabuni, Bishkhapra)	i. Trianthema portulacastrum Linn.	-	Plant
		ii. " pentendra Linn.	-	Plant
382.	Satawar	Asparagus racemosus Willd	Asparagus	Root
383.	Satoona (Chatim)	Alstonia scholaris R.Br.	Chatim Wood	Wood
384.	Satyanasi (Shialkanta)	Argemone maxicana Linn.	-	Root, Seeds
385.	Seb (Tuffah)	Malus sylvestris Mill	Apple	Fruit
386.	Sem (Lab-lab)	i. Dolichos lablab Linn.	Lablab (Bean)	Pods (Seeds)
		ii. Phaseolus vulgaris Linn.		
387.	Sevti (Gul-e-Daudi, Gul-e-Chini)	Chrysanthemum caronarium Linn.	-	Flowers
388.	Shahsipram (Raihan, Nazbo, Babui Tulsi)	Ocimum basilicum Linn.	Basil	Leaves, Flowers
389.	Shahtara (Pitpapra)	i. Fumaria parviflora Lam.	Fumitory	Plant
		ii. " officinalis Linn.	-	Root
390.	Shahtut (Tut)	i. Morus alba Linn.	Mulbery	Fruit
		ii. Morus nigra Linn.	Black Mulbery	"

1.	2.	3.	4.	5.
391.	Shaqarqand	Ipomoea batata Lam.	Sweet Potato	Root (Tuber)
392.	Shaqaqul (Safed Musli, Shaqaq-ul-Misri)	i. Asparegus sarmentosus Linn	Wild Parsnip	Root
		ii. Pastinaca seccacul Linn.	Secacul	"
393.	Sharifa	Annona squamosa Linn.	-	Fruit
394.	Shirkhisht (Turanjabean)	Alhagi maurorum Tourn.	-	Manna
395.	Shisham (Sissoo)	Dalbergia Sissoo Roxb.	-	Wood
396.	Sidr(Ber, Bidari, Aunnab-e-Hindi)	Zyzyphus jujuba Linn.	Jujube Fruit	Fruit
397.	Silaras	Liquidambar Orientalis Miller.	Liquid Storax	Resin
398.	Singhara	Trapa bispinosa Roxb.	-	Fruit
399.	Sohanjana (Sahjana)	Moringa oliefera Lam.	Horse Radish Tree, Drum stick Plant.	Root, Bark, Fruit
400.	Soya (Shibbit)	Anethum sowa Roxb.	Dill Seeds	Seeds
401.	Surajmukhi (Azariyun)	Helianthus annus Linn.	Sunflower	Flower
402.	Surinjan (Talkh, Shirin) Hirantutiva	Colchicum luteum Baker.	Hermodactyle, Hermodactylus	Corms
403.	Taad (Tari)	Borassus flabellifer Linn.	Toddy Tree	Root, Juice Pulp
404.	Taj(Salikla, Qirfa)	Cinnamomum cassia Blume.	-	Bark

1.	2.	3.	4.	5.
405.	Tamr Hindi	Tamarinudus indica Linn.	Tamarind	Fruit
406.	Tambaku	Nicotiana tabacum Linn.	Tobacco	Leaves
407.	Tankari (Habb-e-Kaknaj, Kaknaj)	i. Physalis minima Linn.	-	Fruit
		ii. " alkekengi Linn.	-	Leaves
408.	Tarbooz	Citrullus vulgaris Schrad.	Water Melon	Fruit, Seeds
409.	Tawakhir	Hitchenia cauina Baker.	Indian Arrow Root	Root
410.	Tejbal	Zanthoxylum alatum Roxb.	-	Wood
411.	Tendu	Diospyros melanoxylon Roxb.	-	Root
412.	Tentu (Arlu)	Oroxylon indicum Vent.	-	Root bark, Fruits, Seeds.
413.	Thekri (Punarava)	Boerhavia diffusa Linn.	-	Plant
414.	Thohar (Sij)	Euphorbia nerifolia Linn.	-	Plant
415.	Til (Raughan-e-Kunjad)	Sesamum indicum Linn.	Sesame, jinjili	Seeds, Oil
416.	Tilwan (Harburia)	Gynandropsis gynandra (Linn.) Briquet	-	Plant, Leaves, juice
417.	Tinda	Citrullus vulgaris var. fistulosus (Stocks) Duthie & Fuller.	-	Fruit
418.	Todri (Safaid, Surkh)	i. Mathiola incana R.Br.	-	Seeds

1.	2.	3.	4.	5.
418.	[illegible]	ii. Cheiranthus Cheiri Linn.	-	Seeds
419.	Tulsijangli (Badruj)	Ocimum album Linn.	Wild Basil	Seeds
420.	Tumba (Goma)	i. Leucas aspera Spreng.	-	Plant, Flower Leaves
		ii. " cephalotes Spreng.		
421.	Turbud (Nishot)	Ipomoea turpethum R. Br.	Jalap	Roots
422.	Talop	Exogonium purga Benth.	Jalap	Roots
423.	Turai (Talkh, Shirin)	i. Luffa amara Roxb	-	Fruit
		ii. " acutangula Roxb	-	"
424.	Ud-salib	i. Peeonia emodi Wall.	Salep	Root
		ii. Orchis mascula Linn.	"	"
		iii. " latifolia Linn.	"	"
425.	Ulat Kambal	Abroma augusta Linn.f.	-	Root, bark, Rotts
426.	Untkatara	Echinops echinatus Roxb.	-	Plant
427.	Umm-e-Ghilan (Mughilan, Babool, Aqaqia)	Acacia arabi ca Willd.	Babool Tree.	Gum-resin, Bark.
428.	Undra (Siyah Kanta)	Mimosa rubicaulis Lam.	-	Leaves, Roots

1.	2.	3.	4.	5.
429.	Unnab (Ishqpaichan)	Zyzyphus sativa Gaertn.	-	Fruits
430.	Uppi	Azima tetracantha Lam		Root, Leaves, Root bark.
431.	Ured (Mash	Phaseolus radiatus Linn.	-	Seed
432.	Usara-e-Rewand (Rewanchini)	Rheum emodi Wall.	Rhubarb, Rhum	Roots
433.	Ushba Maghrabi	Smilax orchifolia Roxb.	Sarsaparilla.	Roots
434.	Ushna (Ushnan, Lana)	Holoxylum multiflorum Bunge. and Parmelia, Usnea spp.	-	Lichen
435.	Ustokhuddus	Lavandula stoechas Linn.	French Lavander.	Plant
436.	Utangan	Blepharis edulis Pers	-	Seeds
437.	Waveal (Alior)	Dodonea viscosa Linn.	-	Leaves, Bark, Plant
438.	Zafran	Crocus sativus Linn.	Saffron	Stigma and Styles
439.	Zakhm-e-Hayat	Kalanchoe laciniata Dc.	-	Leaves
440.	Zaminqand	Amrphophallus campanulatus (Roxb) Bl.	Elephant Yalm	Tubers
441.	Zaqoom (Tidhara)	Euphorbia antiquarum Linn.	-	Plant
442.	Zarambad (Narkachoor, Kachoor)	i. Curcuma zedoaria Roxb.	Zedoary	Rhizome
		ii. Zingiper zerumbet Rosc. ex Smith.	"	"

1.	2.	3.	4.	5.
443.	Zarishk (Rasaut, Darhald, Amberbarees)	Berberies lycium Royle.	Indian Berbary	Whole Plant, Extract, Fruits
444.	Zarnab (Talispatra)	i. Abies webbiana Lindl ii. Flacourtia cataphracta Roxb.		Leaves
445.	Zira (Sufed, Siyah)	Cuminum cyminum Linn.	Cumin, Fruits	Fruits
446.	Zufa	Hyssopus officinalis Linn	Hyssop	Husk of the Seeds

(B) LIST OF THE IMPORTANT BARK DRUGS USED IN ISM

1.	*Acacia catechu* Willd.	Bark
2.	*Acacia arabica* Willd.	Bark
3.	*Aconitum chasmanthum* Stapf ex.Holmes.	Bark
4.	*Aegle marmelos* Corr.	Bark
5.	*Albizzia lebbeck* Benth.	Bark
6.	*Alstonia scholaris* R.Br.	Bark
7.	*Anogeissus latifolia* Wall.	Bark
8.	*Anthocephalus indicus* A. Rich.	Bark
9.	*Artocarpus lakoocha* Roxb.	Bark
10.	*Azadirachta indica* A. Juss.	Bark
11.	*Bauhinia variegata* Linn.	Bark
12.	*Betula utilis* D. Don.	Bark
13.	*Boswellia serrata* Roxb.	Bark
14.	*Buchanania lanzan* Spreng.	Bark
15.	*Callicarpa macrophylla* Vahl.	Bark
16.	*Calotropis procera* (Ait) R.Br.	Root Bark
17.	*Capparis spinosa* Linn.	Bark
18.	*Carissa carandas* Linn.	Root Bark
19.	*Cassia fistula* Linn.	Root Bark
20.	*Cinnamomum tamala* Nees & Ebarm.	Bark
21.	*Cinnamomum Zeylanicum* Blume.	Bark
22.	*Citrus maxima* (Burm) Merr.	Root Bark
23.	*Citrus medica* Linn.	Bark
24.	*Clerodendrum phlomidis* Linn.f.	Root Bark

25.	Clerodendrum serratum (Linn.) Moon	Root Bark
26.	Cliteria ternatea Linn.	Root Bark
27.	Coscinium fenestratum (Gaertn.) Colebr.	Bark
28.	Crataeva nurvala Buch-Ham.	Bark
29.	Dalbergia sissoo Roxb.	Bark
30.	Dipterocarpus alatus Roxb.	Bark
31.	Erythrina indica Lam.	Bark
32.	Feronia limonia (Linn.) Swingle	Bark
33.	Ficus bengalensis Linn.	Bark
34.	Ficus hispida Linn.f.	Root Bark
35.	Ficus religiosa Linn.	Bark
36.	Ficus tsiela Roxb.	Bark
37.	Garcinia indica Chois.	Bark
38.	Gmelina arborea Linn.	Root Bark
39.	Gossypium herbaceum Linn.	Bark
40.	Grewia asiatica Linn.	Bark
41.	Holarrhena antidysenterica Wall	Bark
42.	Madhuca longifolia (Linn.) Macbride.	Bark
43.	Malletus philippinensis Muel-Arg.	Bark
44.	Mangifera indica Linn.	Bark
45.	Melia azedarach Linn.	Root Bark
46.	Mesua ferrea Linn.	Bark
47.	Michelia champaca Linn.	Bark
48.	Mimusops elengi Linn.	Bark
49.	Moringa oleifera Lam.	Bark

50.	Myrica nagi Thunb.	Bark
51.	Nerium indicum Mill	Root Bark
52.	Operculina turpethum (Linn.) Silva Manso	Root Bark
53.	Oroxylum indicum Vent.	Bark
54.	Oxyenia dalbergioides Benth.	Bark
55.	Plumbago zeylanca Linn.	Bark
56.	Pongamia pinnata (Linn.) Merr.	Bark
57.	Prunus cerasoides D. Don.	Bark
58.	Pterocarpus marsupium Roxb.	Bark
59.	Punica granatum Linn.	Bark
60.	Quercus infectoria Oliv.	Bark
61.	Randia dumetorum Lamk.	Bark
62.	Salix caprea Linn.	Bark
63.	Saraca asoca (Rose.)De. Wild	Bark
64.	Sesbania grandiflora (Linn.) Pers.	Bark
65.	Sesbania sesban (Linn.) Merr.	Bark
66.	Shorea robusta Gaertn.f.	Bark
67.	Spondias pinnata Kurz.	Bark
68.	Stereospermum suaveolens Dc.	Root Bark
69.	Strebius asper Lour.	Bark
70.	Strychnos nux-vomica Linn.	Root Bark
71.	Symplocos racemosa Roxb.	Bark
72.	Tectona grandis Linn.f.	Bark
73.	Tecomella undulata (G.Don)Seem	Bark
74.	Terminalia arjuna W&A.	Bark
75.	Zanthoxylum alatum Roxb.	Bark
76.	Zizyphus jujuba Lam.	Bark
77.	Zizyphus xylocarpus Willd.	Bark

(C) LIST OF BARK DRUGS TO BE WORKED OUT

1.	Gmelina arborea Linn.	Verbenaceae
2.	Moringa oleifera Lam.	Moringaceae
3.	Aegle marmelos Corr.	Rutaceae
4.	Boswellia serrata Roxb.	Burseraceae
5.	Albizzia lebbeck Benth and A. procera (Roxb.) Benth.	Leguminosae
6.	Symplocos racemosa Roxb.	Symplocaceae
7.	Melia azedarach Linn.	Meliaceae
8.	Pterocarpus marsupium Roxb.	Leguminosae
9.	Syzygium cumini (Linn.) Skeels	Myrtaceae
10.	Terminalia arjuna W&A. and T. tomentosa W&A	Combretaceae
11.	Acacia arabica Willd. and other species	Leguminosae
12.	Premna integrifolia Linn and other species	Verbenaceae
13.	Clerodendrum indicum (Linn.) Kuntze and other species	Verbenaceae
14.	Cinnamomum cassia Blume and other species	Lauraceae

DS 317

(D) REFERENCE LIST OF THE WORK DONE ON BARK DRUGS

1. Ansari, M.S. and Gupta, R.C., 1971, "Pharmacognostical Studied on Capparis zeylanica Linn", Jour. Res. Ind. Med., Vol. VI, No. 1, p. 30.

2. Basu, N.K. and Joneja, A.N., 1949, "Chemical Investigation of Premna integrifolia Linn.", Ind. J. Pharm., Vol. XI, No.6, p. 191.

3. Bhattacharya, I.C. 1961, "Pharmacognostical Study of Chattim Bark Alstonia scolaris R.Br.", Vol. XI (2), The Jour. of Sci. Res. Banaras Hindu University, Banaras, p. 173-87.

4. Datta, S.C. and Bal, S.N., 1945 "Pharmacognostical Studies on Kurchi Bark", Ind. J. Pharmacy, Vol. VII, No.4, p. 113.

5. Datta, S.C. and Bal, S.N., 1946, "Pharmacognostical Studies on Cinchona", Ind. J. Pharmacy, Vol. VIII, No.2, p. 85-97.

6. Gupta, L.P., Sen, S.P. and Udupa, K.N., 1976, "Pharmacognostical and Pharmacological Studies on Terminalia arjuna", Ind. J. Pharmacy, Vol. XI, No.4, p. 16.

7. Gupta, R.C. and Kapoor, L.D., 1975 "Pharmacognostical Studies on 'Sirish - IV' Albizzia odoratissima Benth,-Stem Bark, Ind. J. Pharmacy, p. 81.

8. Gupta, R.C. and Kapoor, L.D.,1973 "Pharmacognostic Study on 'Sirish-II' Albizzia lebbeck Benth - Stem Bark", J. Res. Ind. Med., Vol. VIII, No. 2, p. 29.

9. Gupta, R.C. and Kapoor, L.D., 1974, "Pharmacognostic Study on 'Sirish - III' Albizzia procera Bash - Stem Bark", J. Res. Ind. Med., Vol. IV, No. 3, p. 39.

10. Mehta, C.R. and Patel, C.N., 1959, "Chemical Examination of the Bark of Ailanthus excelsa Roxb.", Ind. J. Pharmacy, Vob. 21, No.5, p. 143.

11. Mitra, R. and Kapoor, L.D., 1971, "A Comparative Pharmacognostic Study of Commercial Samples of the Varu Bark", J. Res. Ind. Med., Vol. VI, No.4, p. 175.

12. Mitra, R. and Kapoor, L.D., 1974 "Pharmacognostic Study on the Root Bark of Crataeva nurvala Ham. (Varuna)", J. Res. Ind. Medl., Vol. IX, No. 3, p. 49.

13. Mitra, R., and Kapoor, L.D. 1974, "Pharmacognostical Study on 'Plaksha I'- Stem Bark of Ficus tsiela Roxb", J. Res. Ind. Med., Vol. IX, No. 3, p. 115.

14. Prakash, A. and Prasad, S., 1969, "Pharmacognostical Studies on the Bark of Oroxylum indicum Vent. (Syonaka)", Ind. J. Pharmacy, p. 73.

15. Prakash, A. and Prasad, S., 1969, "Pharmacognostical Studies on the Barks of Aegle marmelos Corr. (Bilva)," Ind. J. Pharm. p. 97.

16. Prasad, S., Jain, V.K. and Mitra, R., 1967, "Pharmacognostical Studies on the Bark of Rohitak - Dadima Pushpa, Tecomella undulata Seen", 2, 1, J. Res. Ind. Med., Banaras Hindu University, Banaras, p. 25.

17. Prasad, S. and Jayaswal, S.B., 1962, "Pharmacognostical Studies on the Bark of Anthocephalus indicus A. Rich," Vol. XII (2), The Jour. of Sci. Res., Banaras Hindu University, Banaras, 317-325.

18. Prasad, S. and Kaul, P.N., 1956, "Pharmacognostical Studies of Holarrhena antidysenterica and Wrightia tinctoria Barks", Vol. XVIII, No. II, Ind. Jour. Pharm, p. 423-432.

19. Prasad, S. and Prakash, A. 1967, Pharmacognostical Studies on Stereospermum suaveolens Dc., Vol. ZVII (I), The Jour. of Sci. Res., Banaras Hindu University, Banaras, p. 101-111.

20. Prasad, S., Gupta, P.K. and Bhattacharya, I.C., 1960, Pharmacognostical Studies on Rohitak Bark: Barks of Erythrina variegata Linn. Var. orientatis (Linn.) Merill Amoora rohituka W&A," Vol. 19 C, No.4, Jour. of Sci & Indust. Res, p. 107.

21. Prushothaman, K.K. and Natrajan, R.K., 1974 "Chemical Examination of Patala (Stereospermum tetragonum Dc.)", Ind. J. Pharm., p. 107.

22. Raichaudhuri, H.N. and Kayal, R.N., 1976, "Pharmacognostical Studies on the Stem Bark of Ficus religiosa Linn., Bull. Bot. Soc, Bengal, 30 (1+2), p. 43-46.

23. Subramanian, S.S. and Ramakrishnan, S. 1968, "A Note on Chemical Differentiation of the Barks of Delonix elata and D. regia," Ind. J. Pharm., Vol. 30, No.9, p. 212.